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Hypervelocity Technology Escape System Concepts

Volume II. Software Manual

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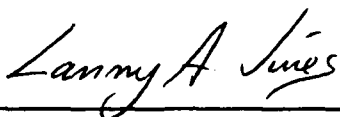
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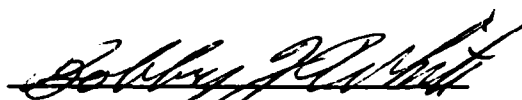
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1.0 INTRODUCTION

This report documents the software developed during United States Air Force (USAF) Contract F33615-86-C-3410, "Hypervelocity Technology Escape System Concepts." The objective of the program was to develop and evaluate crew escape concepts for hypervelocity vehicles capable of transatmospheric missions.

The subroutines developed to simulate additional escape systems components, compatible with EASY5 computer code (Reference 1), are described in Section 2.0. The model file developed to simulate orbital escape condition is discussed in Section 3.0. The data used for generating computer-aided design (CAD) color graphic models of the selected escape concepts are discussed in Section 4.0.

2.0 NEW EASY5 COMPONENT SUBROUTINES

The EASY5 component subroutines modified or added under this program include:

- ° Component RE to calculate the radiative equilibrium temperature of a spherical surface.
- ° Component AS to calculate the aerodynamic forces and moments on the various escape system concepts. Additional subroutines AERO and TAERO support calculations required by AS.

These subroutines are described in the following subsections.

2.1 COMPONENT SUBROUTINE RE

For the stagnation region of a spherical surface moving at hypersonic speed, the component subroutine RE provides the following information:

- a. It calculates the radiative equilibrium temperature of the surface using the equations described in Section 2.1.1.
- b. It calculates the heating rate of the surface based on the estimated surface temperature or the radiative equilibrium temperature, whichever is less.

2.1.1 Mathematical Background

The stagnation temperature, t_o , for a vehicle moving through air (Figure 2.1-1) is given by:

$$t_o = t_\infty + \frac{V_\infty^2}{2C_p g_c} \quad (2-1)$$

where:

- t_∞ = ambient temp, °R
- V_∞ = vehicle velocity, ft/sec
- C_p = specific heat at constant pressure, $\frac{\text{ft} \cdot \text{lb}_f}{\text{lb}_m \cdot ^\circ\text{R}}$
- g_c = a constant equal to $32.174 \frac{\text{lb}_m \cdot \text{ft}}{\text{sec}^2 \cdot \text{lb}_f}$

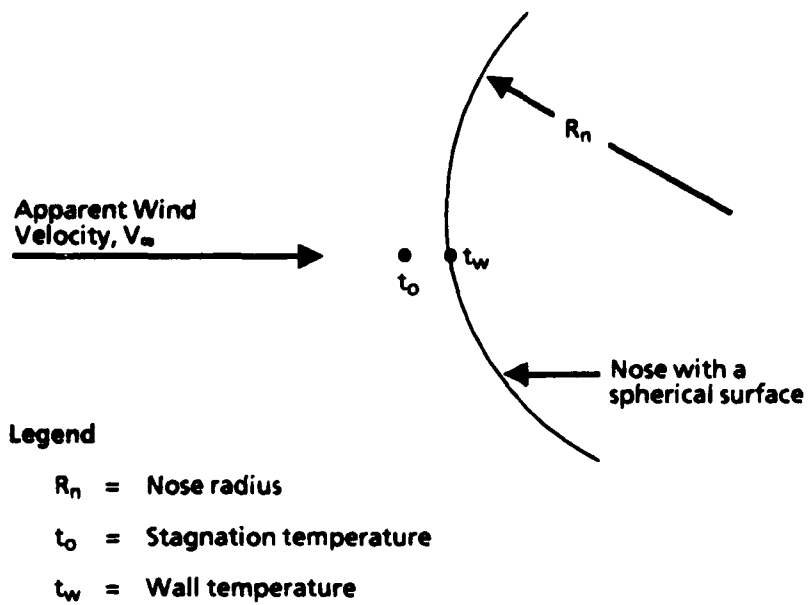


Figure 2.1-1. Nose Geometry for Component Subroutine RE.

The flow is laminar in the stagnation region. Therefore, the heat transfer coefficient h is given by:

$$h = \frac{.1055}{\sqrt{R_n}} \sqrt{\frac{\rho_\infty}{\rho_0}} \left(\frac{V_\infty}{10,000} \right)^{1.16} \quad (2-2)$$

where: R_n = nose radius, ft.
 ρ_0 = sea level air density, slug/ft³
 ρ_∞ = ambient air density, slug/ft³

At the radiative equilibrium temperature, the heat gained by convection is equal to the heat dissipated by radiation. Thus,

$$Q = h(t_0 - t_w) = E \epsilon t_w^4 \quad (2-3)$$

where: Q = heat transfer rate, Btu/sec
 t_w = radiative equilibrium wall temperature, °R
 E = Stefan-Boltzmann constant ($.476 \cdot 10^{-12} \frac{\text{Btu}}{\text{sec.ft}^2.\text{R}^4}$)
 ϵ = emissivity of the surface material

An iterative procedure is used to solve Equations (2-1), (2-2), and (2-3) for the radiative equilibrium wall temperature t_w . This wall temperature is then used to calculate the heat transfer rate using Equation (2-3).

The flowchart for subroutine RE is given in Figure 2.1-2.

2.1.2 Input and Output Data

The input and output data for component subroutine RE are listed in Table 2.1-1.

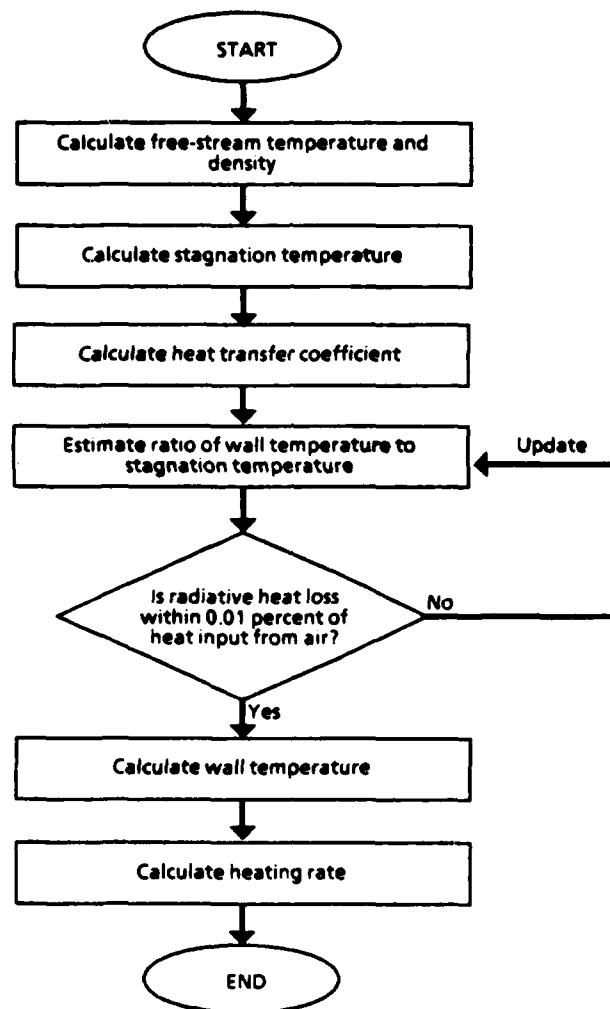


Figure 2.1-2. Flowchart for Component Subroutine RE.

Table 2.1-1. Component RE Data List

Input			
Physical quantity name	Port number	Description	Units
V	-	Velocity of vehicle	ft/sec
RN	-	Nose radius	ft
EM	-	Surface emissivity of the nose	-
ALT	-	Specified altitude of the vehicle	ft
G	-	Inertia proportionality factor equal to 32.2	$\frac{\text{lb}_m \cdot \text{ft}}{\text{lb}_f \cdot \text{sec}^2}$
CP	-	Specific heat of the air at the specified altitude	$\frac{\text{ft} \cdot \text{lb}_f}{\text{lb}_m \cdot ^\circ \text{R}}$
SWIRE	-	Giving this variable a value greater than 1.0 will indicate that the same surface was evaluated at previous call to RE and that the iteration process should use the previously iterated value. When the surface under consideration changes, set the value to less than 1.0	-
TWEST	-	The estimated surface temperature	deg R
BP	-	The barometric pressure at the reference altitude for a non-standard atmosphere	in Hg
TE	-	Air temperature at the reference altitude for a non-standard atmosphere	deg R
Output			
Physical quantity name	Port number	Description	Units
TW	-	The radiative equilibrium temperature of the surface	deg R
TO	-	Freestream temperature of the air at the specified altitude	deg R
Q	-	The heating rate of the surface based on the lesser value between the radiative equilibrium temperature and the estimated surface temperature	$\frac{\text{BTU}}{\text{ft}^2 \cdot \text{sec}}$

2.1.3 Subroutine RE Source Code

A listing of subroutine RE source code is provided in Appendix A.

2.2 COMPONENT SUBROUTINE AS

The existing subroutine for component AS in the EASY5 computer program was modified slightly to allow for the variation in the aerodynamic data for the different escape concepts. The modifications consist of the following:

- a. Tables for aerodynamic coefficients have been removed from Subroutine AS.
- b. Instead of calling Subroutine TLU for table lookup of aerodynamic coefficients using packed tabular data, a new subroutine TAERO is called for table lookup of aerodynamic coefficients. Subroutine TAERO accesses the unpacked aerodynamic data in Subroutine AERO automatically through COMMON blocks.
- c. The escape system is assumed to be in free stream.

Thus, in order to use the new component Subroutine AS, Subroutines AERO and TAERO must be provided as part of the EASY5 library.

2.2.1 Mathematical Background

If u_x , u_y and u_z are velocity components of an escape system with respect to wind along x, y and z axes respectively, then:

$$\alpha = \tan^{-1} (u_z/u_x) \quad (2-4)$$

$$\beta = \tan^{-1} (u_y/u_x) \quad (2-5)$$

$$q = 0.5 \rho_{\infty} (u_x^2 + u_y^2 + u_z^2) \quad (2-6)$$

$$M = (u_x^2 + u_y^2 + u_z^2)^{0.5}/V_s \quad (2-7)$$

where:

α = angle of attack, deg
 β = sideslip angle, deg
 q = dynamic pressure, lb_f/ft^2
 ρ_∞ = ambient air density, slug/ft^3
 M = Mach number
 V_S = sonic speed

After determining the values of α , β , and M , stored tables for aerodynamic data are interpolated to calculate the corresponding values of aerodynamic force and moment coefficients. Then for each axis:

$$F = C_F q S \quad (2-8)$$

$$T = C_T q S L \quad (2-9)$$

where:

F = force in the axis of interest
 C_F = aerodynamic force coefficient in that axis
 S = reference area
 T = torque in that axis
 C_T = aerodynamic torque coefficient in that axis
 L = reference length

The flowchart for Subroutine AS is given in Figure 2.2-1. The flowchart for Subroutine TAERO called by AS for determination of aerodynamic coefficients is provided in Figure 2.2-2. Subroutine AERO has the required tables for the aerodynamic data, but does not do any calculations. Thus, there is no flowchart for Subroutine AERO.

2.2.2 Input and Output Data

The input and output data for the component Subroutine RE are listed in Table 2.2-1.

2.2.3 Subroutine Source Code

A listing of the source code for the component Subroutine AS and the associated Subroutines AERO and TAERO is provided in Appendix A.

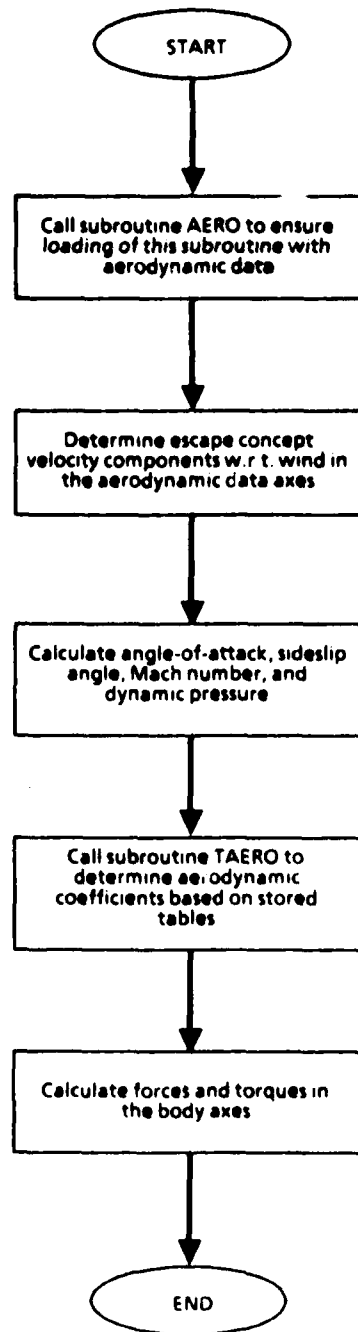


Figure 2.2-1. Flowchart for Component Subroutine AS.

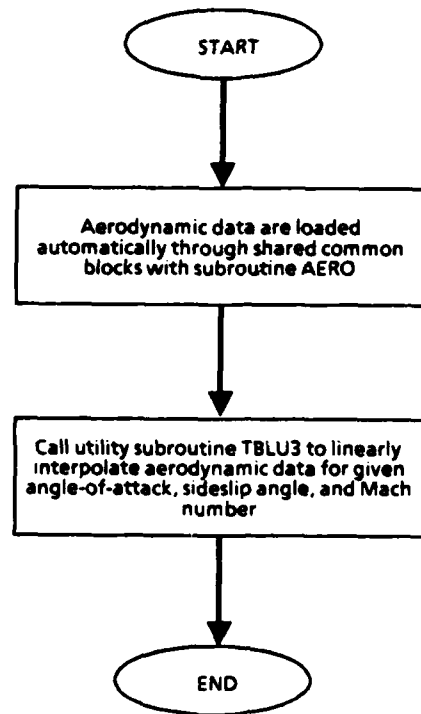


Figure 2.2-2. Flowchart for Subroutine TAERO.

Table 2.2-1. Component AS Data List

Input			
Physical quantity name	Port number	Description	Units
UST (3)	-	Velocity w.r.t. earth surface in the x, y, z body axes	ft/sec
EST (3)	-	Relative Euler angles of earth to body	deg
SRP (3)	-	Position vector w.r.t. earth system along x, y, z	ft
S	-	Reference area	ft ²
RL	-	Reference length	ft
RON	-	Specifies the number of the aero data tables to be used	-
ARP	-	Position vector of the cg w.r.t. to the reference point	ft
PHI	-	The angle between the x axis that the aero data is given in and the longitudinal axis (standard x-axis)	deg
Output			
Physical quantity name	Port number	Description	Units
FA (3)	-	Aerodynamic forces in the x, y, and z body axes	lbs
TA (3)	-	Aerodynamic torques in the x, y, and z body axes	ft-lbs
ALF	-	Angle of attack	deg
BET	-	Sideslip angle	deg
Q	-	Dynamic pressure	lbs-ft ²
QS	-	Dynamic pressure times reference area	lbs
VS	-	Sonic speed	ft/sec
MOC	-	Mach number	-

3.0 MODEL FILE FOR DYNAMIC SIMULATION

The dynamic simulations of the various escape concepts were conducted using EASY5 computer program (Reference 1). Usage of EASY5 program requires creation of model and analysis files to describe the system to be analyzed. Two different types of model files were used for analysis.

The first type of model file for the encapsulated seats or the capsules was essentially the same as that used on the CREST program for ejection seat technology development (Reference 2). These model files were used for simulating all atmospheric escape conditions, and provided six-degree-of-freedom simulations with the control law and propulsion system characteristics simulated in detail.

The dynamic analysis for the orbital escape condition had to be made significantly simpler than that for the atmospheric escape conditions to avoid excessively high computation times. A new model file was, therefore, developed under this program to simulate the orbital escape condition. This model file is discussed in more detail in the following paragraphs.

3.1 MATHEMATICAL BACKGROUND

The following assumptions were made in the development of the model file for orbital escape simulation:

- a. The escape system maintains the desired angle of attack, specified as a function of altitude, during reentry into the atmosphere, so that the relatively fast dynamics of the controller and the propulsion system does not have to be simulated.
- b. The spin velocity of the earth can be neglected with minimal effect on the parameters of interest such as altitude, Mach number, acceleration or heating rate time histories.

The flowchart for this model file is shown in Figure 3.1-1. Most of the calculations are done in standard EASY5 components AG, AS, SE, RE and IN. The mathematical equations used in these components are provided in Reference 1 or Section 2.0. The required modification to accelerative forces in an associated FORTRAN block is discussed below.

The gravitational force on an escape system due to earth is given by the equation:

$$\text{gravitational force} = \frac{W}{32.174} \frac{1.4077 \cdot 10^{16}}{(2.0925 \cdot 10^7 + h)^2} \quad (3-1)$$

where:

W = Weight of the escape system at mean sea level, lbs.

h = Altitude of the escape system above mean sea level, ft.

A gravitational force equal to W is built into the component Subroutine SE. Thus, a correction to this gravitational force needs to be supplied to component SE. This correction in gravitational force is equal to the gravitational force from Equation (3-1) minus W.

A corrective force to allow for centrifugal force need also to be supplied to component Subroutine SE. The centrifugal force on the escape system can be calculated from the following equation:

$$\text{centrifugal force} = \frac{W}{32.174} \frac{v^2}{(2.0925 \cdot 10^7 + h)} \quad (3-2)$$

where v is the velocity component of the escape system in the local horizontal plane.

3.2 SOURCE CODE

A listing of the source code for the model file used for orbital escape simulation is provided in Appendix B.

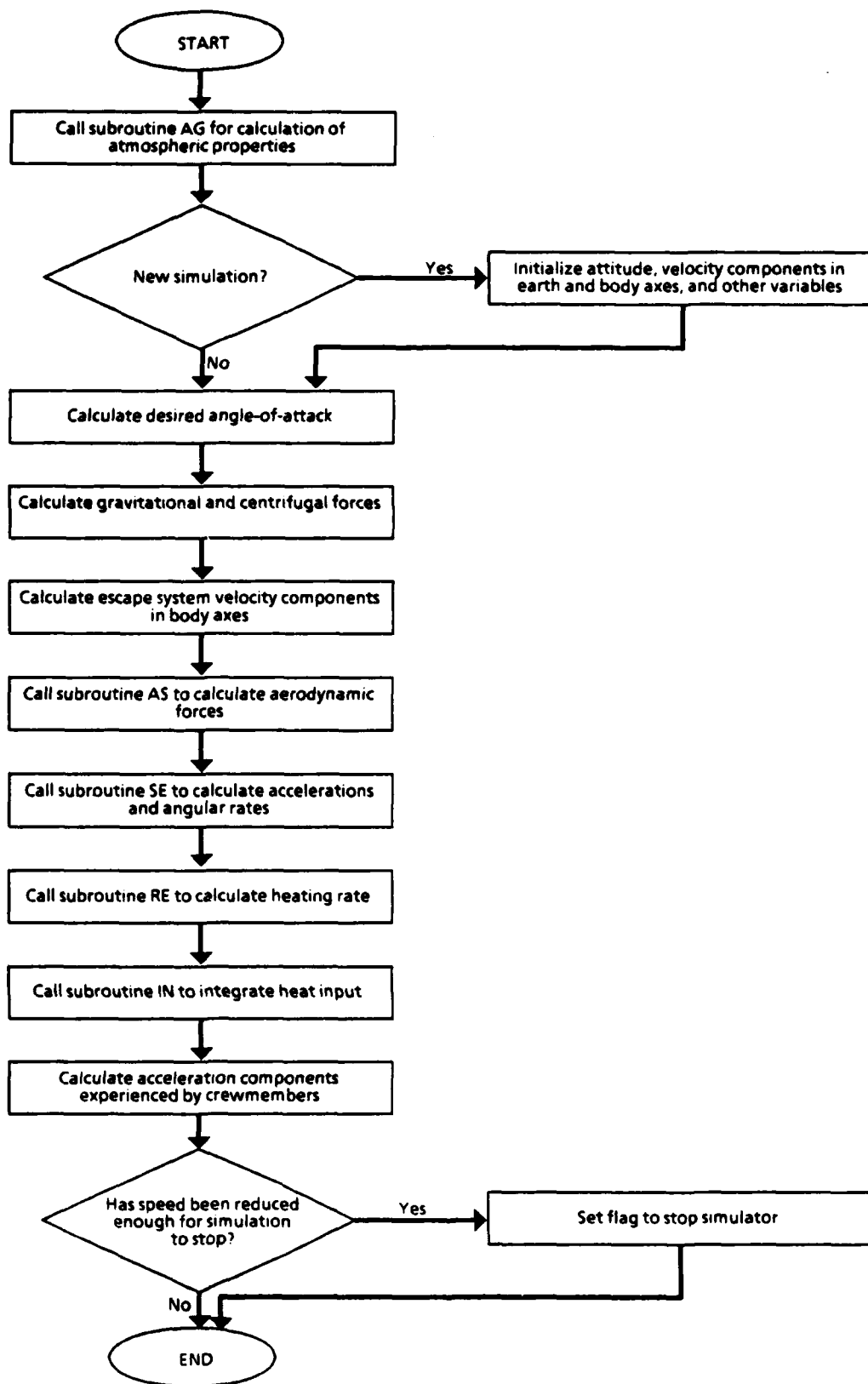


Figure 3.1-1. Flowchart for Model File Used for Orbital Escape Simulation.

4.0 DATA FOR GRAPHIC MODELS

As part of the Hypervelocity Technology Escape System Concepts program, the CADC software package (Reference 3) provided by USAF was used for generating color graphic models of the selected escape system concepts. The selected concepts included a dual-place encapsulated seat for the horizontally-launched vehicle (HLV) and a single-place encapsulated seat for the vertically-launched vehicle. The collection of data used to generate these graphic models by applying the CADC software package is provided in Appendix C.

REFERENCES

1. West, C. L., et al., "Analysis of Ejection Seat Stability Using EASY Program," AFWAL-TR-80-3014, September 1980.
2. USAF Contract F33615-84-C-0518, "Crew Escape Technologies (CREST) Advanced Development Technology Program," April 1984.
3. Evers, J. E., "CIMS CAD/C User's Guide, Procedures for Using the CAD/C Software and Manual," Computer Integrated Manufacturing Systems, 1987.

LIST OF ABBREVIATIONS

CAD	Computer Aided Design
CREST	Crew Escape Technologies
HLV	Horizontally Launched Vehicle
HVT	Hypervelocity Technology
USAF	United States Air Force
VLV	Vertically Launched Vehicle

APPENDIX A

SUBROUTINE SOURCE CODE

This Appendix lists the source code for Subroutines AERO, AS, RE, and TAERO in that order. Five different versions of Subroutine AERO are provided. These versions of AERO correspond to the aerodynamic data for single-place encapsulated seat, dual-place encapsulated seat, HLV capsule with wings deployed, HLV capsule without wing deployment, and VLV capsule.

SUBROUTINE AERO
FILE NAME: ARODAT1

THIS SUBROUTINE CONTAINS THE AERODYNAMIC DATA FOR
HYPERVELOCITY ESCAPE CONCEPT NUMBER: 1 (SINGLE
ENCAPSULATED SEAT)

THE COEFFICIENTS ARE DEFINED AS FOLLOWS:

CX = X FORCE COEFFICIENT
CY = Y FORCE COEFFICIENT
CZ = Z FORCE COEFFICIENT
CL = X MOMENT COEFFICIENT
CM = Y MOMENT COEFFICIENT
CN = Z MOMENT COEFFICIENT

THE GIVEN VALUES ARE REPRESENTATIVE FOR A RANGE OF
MACH NUMBERS FROM 0.6 TO 20, ANGLES OF ATTACK FROM
-90 TO 90 DEG. AND A SIDE SLIP ANGLE OF 0.0 DEG.

```
COMMON/AERPARM/RMACH(7),VALPHA(7),VBETA(1)
COMMON/AERO1/CX(7,7,1)
COMMON/AERO2/CY(7,7,1)
COMMON/AERO3/CZ(7,7,1)
COMMON/AERO4/CL(7,7,1)
COMMON/AERO5/CM(7,7,1)
COMMON/AERO6/CN(7,7,1)
DATA (RMACH(1),1=1,7)/0.6,0.9,1.2,4.0,10.0,15.0,20.0/
DATA (VALPHA(1),1=1,7)/-90,-60,-30,0,30,60,90/
DATA (VBETA(1),1,0)/
DATA (CX(1,1,1),1=1,7,1=1,7,1=1,7)/49*0./
DATA (CY(1,1,1),1=1,7,1=1,7,1=1,7)/49*0./
DATA (CZ(1,1,1),1=1,7,1=1,7,1=1,7)/
*0.2600, -0.4600, -0.6400, -0.6010, -0.5360, -0.5270, -0.5240,
*0.2200, 0.2400, 0.2100, 0.2080, 0.2320, 0.2270, 0.2160,
*0.4650, 0.5550, 0.7750, 0.6680, 0.6090, 0.5970, 0.5850,
*0.7950, 0.9390, 1.1950, 1.0960, 0.9860, 0.9650, 0.9490,
*1.0650, 1.2450, 1.5140, 1.4130, 1.3360, 1.3130, 1.2870,
*0.9200, 1.0600, 1.3800, 1.2670, 1.1880, 1.1400, 1.0830,
*0.5800, 0.7200, 0.8800, 0.8280, 0.7680, 0.7540, 0.7430/
DATA (CL(1,1,1),1=1,7,1=1,7,1=1,7)/
*3.4500, -3.4500, -3.6250, -3.3260, -3.1020, -2.9800, -2.838,
*-2.5500, -2.5500, -2.6000, -2.4640, -2.2890, -2.2530, -2.210,
*-1.0850, -1.0850, -1.1000, -0.9600, -0.8530, -0.8340, -0.8220,
*0.5550, 0.5550, 0.5810, 0.5210, 0.4430, 0.4340, 0.4290,
*2.4600, 2.4600, 2.5800, 2.2120, 2.0090, 1.9740, 1.9480,
*3.7000, 3.7000, 3.8250, 3.5620, 3.3520, 3.2400, 3.1140,
*3.7000, 3.7000, 3.8500, 3.6170, 3.4050, 3.2770, 3.1250/
DATA (CM(1,1,1),1=1,7,1=1,7,1=1,7)/
*0.2250, 0.2250, 0.2450, 0.1930, 0.1670, 0.1670, 0.1690,
*0.0600, 0.0600, 0.0850, 0.0120, -0.0170, -0.0220, -0.0230,
*0.1040, 0.1040, 0.1360, 0.0845, 0.0660, 0.0650, 0.0650,
*0.2480, 0.2480, 0.2780, 0.2270, 0.2330, 0.2310, 0.2280,
*0.1940, 0.1940, 0.2420, 0.1170, 0.1480, 0.1450, 0.1360,
*0.3700, -0.3700, -0.3800, -0.3550, -0.3320, -0.3330, -0.3380,
*-0.6950, -0.6950, -0.7200, -0.6610, -0.6250, -0.5880, -0.5590/
RETURN
END
```

CCCCCCCCCCCCCCCCCCCCCCCCCCCC

SUBROUTINE AERO
FILE NAME: ARODAT2

THIS SUBROUTINE CONTAINS THE AERODYNAMIC DATA FOR
HYPERVELOCITY ESCAPE CONCEPT NUMBER: 2 (DUAL
ENCAPSULATED SEAT)

THE COEFFICIENTS ARE DEFINED AS FOLLOWS:

CX = X FORCE COEFFICIENT
CY = Y FORCE COEFFICIENT
CZ = Z FORCE COEFFICIENT
CL = X MOMENT COEFFICIENT
CM = Y MOMENT COEFFICIENT
CN = Z MOMENT COEFFICIENT

THE GIVEN VALUES ARE REPRESENTATIVE FOR A RANGE OF
MACH NUMBERS FROM 0.6 TO 20, ANGLES OF ATTACK FROM
-90 TO 90 DEG., AND A SIDE SLIP ANGLE OF 0.0 DEG..

```
COMMON/AERO1/CX(7,7,1)
COMMON/AERO2/CY(7,7,1)
COMMON/AERO3/CZ(7,7,1)
COMMON/AERO4/CL(7,7,1)
COMMON/AERO5/CM(7,7,1)
COMMON/AERO6/CN(7,7,1)
COMMON/AEROPRM/RMACH(7),VALPHA(7),VBETA(1)
DATA(RMACH(1),1=1,7)/.6,9,12,5,10,15,20./
DATA(VALPHA(1),1=1,7)/-90,-60,-30,0,30,60,90./
DATA(VBETA(1),1=1,7)/0./
DATA((CL(I,J,1),I=1,7),J=1,7)/49*0./
DATA((CM(I,J,1),I=1,7),J=1,7)/49*0./
DATA((CN(I,J,1),I=1,7),J=1,7)/49*0./
DATA((CX(I,J,1),I=1,7),J=1,7)/
* -0.2800, -0.3800, -0.6000, -0.5170, -0.4740, -0.4850, -0.4610,
* 0.2200, 0.2100, 0.1600, 0.1850, -0.1960, -0.1920, -0.1830,
* 0.3290, 0.4500, 0.6300, 0.5550, 0.5260, 0.5150, 0.5150,
* 0.6390, 0.7640, 0.9800, 0.9010, 0.8480, 0.8280, 0.8280,
* 0.9090, 1.0450, 1.2850, 1.1910, 1.1510, 1.1320, 1.1320,
* 0.8000, 0.9400, 1.1600, 1.0770, 1.0300, 0.9900, 0.9410,
* 0.4600, 0.5900, 0.8000, 0.7190, 0.6780, 0.6650, 0.6550/
DATA((CZ(I,J,1),I=1,7),J=1,7)/
* -2.9500, -2.9500, -3.0000, -2.8820, -2.7450, -2.6360, -2.5090,
* -2.2000, -2.2000, -2.2750, -2.1060, -2.0260, -1.9820, -1.9570,
* -0.9400, -0.9400, -0.9700, -0.8030, -0.7470, -0.7310, -0.7310,
* 0.2900, 0.2900, 0.2850, 0.4190, 0.3820, 0.3740, 0.3740,
* 1.9850, 1.9850, 2.0150, 1.8630, 1.7600, 1.7300, 1.7300,
* 3.2000, 3.2000, 3.2500, 3.0810, 2.9620, 2.8670, 2.7610,
* 3.2500, 3.2500, 3.3000, 3.1560, 3.0210, 2.9080, 2.7750/
DATA((CM(I,J,1),I=1,7),J=1,7)/
* 0.1800, 0.1800, 0.2100, 0.1680, 0.1540, 0.1540, 0.1560,
* 0.0200, 0.0200, 0.0400, 0.0400, 0.0110, 0.0150, -0.1600,
* 0.0880, 0.0880, 0.1110, 0.0670, 0.0590, 0.0580, 0.0580,
* 0.2060, 0.2060, 0.2360, 0.1960, 0.1990, 0.1980, 0.1980,
* 0.1320, 0.1320, 0.1720, 0.1060, 0.1170, 0.1140, 0.1140,
* 0.3300, 0.3300, 0.3900, -0.3210, -0.3100, -0.3100, -0.3150,
* -0.5950, -0.5950, -0.6150, -0.5770, -0.5590, -0.5260, -0.4850/
RETURN
END
```

CCCCCCCCCCCCCCCCCCCC

SUBROUTINE AERO
FILE NAME: ARODAT3
THIS SUBROUTINE CONTAINS THE AERODYNAMIC DATA FOR
HYPERVELOCITY ESCAPE CONCEPT NUMBER: 3 (HLV CAPSULE
WITH WINGS DEPLOYED)

THE COEFFICIENTS ARE DEFINED AS FOLLOWS:

CX = X FORCE COEFFICIENT
CY = Y FORCE COEFFICIENT
CZ = Z FORCE COEFFICIENT
CL = X MOMENT COEFFICIENT
CM = Y MOMENT COEFFICIENT
CN = Z MOMENT COEFFICIENT

THE GIVEN VALUES ARE REPRESENTATIVE FOR A RANGE OF
MACH NUMBERS FROM 0.6 TO 20, ANGLES OF ATTACK FROM
-30 TO 30 DEG., AND SIDE SLIP ANGLE OF 0.0 DEG..

```
COMMON/AERO1/CX(7,3,1)
COMMON/AERO2/CY(7,3,1)
COMMON/AERO3/CZ(7,3,1)
COMMON/AERO4/CL(7,3,1)
COMMON/AERO5/CM(7,3,1)
COMMON/AERO6/CN(7,3,1)
COMMON/AERP/VALPHA(1), VALPHA(3), VBETA(1)
DATA(RMACH(1), I=1,3)/-30.,0.,30./
DATA(VBETA(1), I=1,3)/0.6,0.9,1.2,4.,10.,15.,20./
DATA(CX(1,1,1), I=1,7, J=1,3)/21*0./
DATA(CY(1,1,1), I=1,7, J=1,3)/21*0./
DATA(CZ(1,1,1), I=1,7, J=1,3)/21*0./
DATA(CX(1,1,1), I=1,7, J=1,3)/
* 0.6600, 0.7600, 0.9400, 0.8765, 0.8013, 0.7868, 0.7704,
* 0.6600, 0.7800, 1.0000, 0.9224, 0.8351, 0.8129, 0.7896,
* 0.5800, 0.6900, 0.8800, 0.7968, 0.7388, 0.7254, 0.7090/
DATA(CZ(1,1,1), I=1,7, J=1,3)/
* -2.3000, -2.3000, -2.4000, -1.7378, -1.5585, -1.5254, -1.5072,
* -0.0200, -0.0200, -0.0200, -0.0605, -0.0265, -0.0222, -0.0207,
* 1.6800, 1.6800, 1.7000, 1.4787, 1.2634, 1.2338, 1.2170/
DATA(CM(1,1,1), I=1,7, J=1,3)/
* 0.0245, 0.0245, 0.0290, 0.0244, 0.0112, 0.0121, 0.0143,
* 0.0190, 0.0190, 0.0225, 0.0176, 0.0044, 0.0029, 0.0024,
* 0.0925, 0.0925, 1.2000, 0.0793, 0.0815, 0.0792, 0.0765/
RETURN
END
```

CCCCCCCCCCCCCCCC

SUBROUTINE AERO

THIS SUBROUTINE CONTAINS THE AERODYNAMIC DATA FOR
HYPERVELOCITY ESCAPE CONCEPT NUMBER: 4 (HLV CAPSULE
WITHOUT WING DEPLOYED)

THE COEFFICIENTS ARE DEFINED AS FOLLOWS:

CX = X FORCE COEFFICIENT
CY = Y FORCE COEFFICIENT
CZ = Z FORCE COEFFICIENT
CL = X MOMENT COEFFICIENT
CM = Y MOMENT COEFFICIENT
CN = Z MOMENT COEFFICIENT

THE GIVEN COEFFICIENTS ARE REPRESENTATIVE FOR A RANGE OF
MACH NUMBERS FROM 0.6 TO 20. ANGLES OF ATTACK FROM -30
TO 30 DEG., AND A SIDE SLIP ANGLE OF 0.0 DEG..

```

+ DIMENSION CX(7,3,1),CY(7,3,1),CZ(7,3,1),
  CL(7,3,1),CM(7,3,1),CN(7,3,1)
  COMMON/AERO1/CX
  COMMON/AERO2/CY
  COMMON/AERO3/CZ
  COMMON/AERO4/CL
  COMMON/AERO5/CM
  COMMON/AERO6/CN
  COMMON/AERPARM/RMACH(7),VALPHA(3),VBETA(1)
  DATA(RMACH(1),1=1,7),O,6,0,9,1,2,4,10,15,20./
  DATA(VALPHA(1),1=1,3)/-30.,0.,30./
  DATA(VBETA(1),1=1,3)/0./
  DATA((CL(I,J,1),I=1,7),J=1,3)/21*0./
  DATA((CM(I,J,1),I=1,7),J=1,3)/21*0./
  DATA((CN(I,J,1),I=1,7),J=1,3)/
  DATA(CX(1,1,1),1=1,7),J=1,3)/
  * 0.6000, 0.7210, 0.7400, 0.8770, 0.7970, 0.6890, 0.7730,
  * 0.6600, 0.7810, 0.8000, 0.9320, 0.8410, 0.8080, 0.8090,
  * 0.5400, 0.6580, 0.6690, 0.8230, 0.7590, 0.6690, 0.7360,
  DATA(CZ(1,1,1),1=1,7),J=1,3)/
  * -1.5790, -1.5790, -1.6390, -1.4300, -1.2490, -0.9110, -1.2070,
  * -0.0190, -0.0190, -0.0190, -0.0470, -0.0130, -0.0010, -0.0070,
  * 1.4200, 1.4200, 1.4580, 1.1740, 1.0120, 0.4320, 0.9740,
  DATA((CM(1,1,1),1=1,7),J=1,3)/
  * 0.0340, 0.0340, 0.0370, 0.0360, 0.0210, -0.0580, 0.0240,
  * 0.0170, 0.0170, 0.0190, 0.0150, 0.0020, -0.0020, 0.0004,
  * 0.0620, 0.0620, 0.0690, 0.0580, 0.0630, 0.0950, 0.0590,
  RETURN
END

```

CCCCCCCCCCCCCCCCCCCC

SUBROUTINE AERO

THIS SUBROUTINE CONTAINS THE AERODYNAMIC DATA FOR
HYPERVELOCITY ESCAPE CONCEPT NUMBER: 5 (VLV CAPSULE)

THE COEFFICIENTS ARE DEFINED AS FOLLOWS:

CX = X FORCE COEFFICIENT
CY = Y FORCE COEFFICIENT
CZ = Z FORCE COEFFICIENT
CL = X MOMENT COEFFICIENT
CM = Y MOMENT COEFFICIENT
CN = Z MOMENT COEFFICIENT

```
COMMON/AERO1/CX(7,3,1)
COMMON/AERO2/CY(7,3,1)
COMMON/AERO3/CZ(7,3,1)
COMMON/AERO4/CL(7,3,1)
COMMON/AERO5/CM(7,3,1)
COMMON/AERO6/CN(7,3,1)
COMMON/AERP/PM/RMACH(7), VALPHA(3), VBETA(1)
DATA(RMACH(1)) I=1,7 / 0.6, 0.9, 1.2, 4.10, 15.20, /
DATA(VALPHA(1)) I=1,3 / -30.0, 30.0, /
DATA(VBETA(1)) I=1,3 / 0.0, /
DATA((CL(I,J,1)) I=1,7, J=1,3) / 21*0. /
DATA((CN(I,J,1)) I=1,7, J=1,3) / 21*0. /
DATA((CY(I,J,1)) I=1,7, J=1,3) / 21*0. /
DATA((CX(I,J,1)) I=1,7, J=1,3) /
* 0.3800, 0.4200, 0.5600, 0.5072, 0.4660, 0.4630, 0.4624,
* 0.3100, 0.3600, 0.5000, 0.4586, 0.4017, 0.3977, 0.3974,
* 0.4400, 0.5100, 0.6500, 0.5823, 0.5362, 0.5285, 0.5212,
DATA((CZ(I,J,1)) I=1,7, J=1,3) /
* -0.9900, -0.9900, -1.0400, -0.8975, -0.8356, -0.8259, -0.8225,
* 0.0400, 0.0400, 0.0400, 0.0491, 0.0456, 0.0453, 0.0453,
* 1.1400, 1.1400, 1.1800, 1.0310, 0.9644, 0.9518, 0.9428,
DATA((CM(I,J,1)) I=1,7, J=1,3) /
* 0.0430, 0.0430, 0.0500, 0.0397, 0.0268, 0.0260, 0.0258,
* 0.0300, 0.0300, 0.0140, 0.0110, 0.0125, 0.0127, 0.0128,
* -0.0710, -0.0710, -0.0980, -0.0612, -0.0476, -0.0480, -0.0496,
RETURN
END
```

CCCCCCCCCCCCCCCC


```

C      UO{1}=TEMP{1}*COSD(PHI)-TEMP(3)*SIND(PHI)
      UO{2}=TEMP{2}
      UO{3}=TEMP{1}*SIND(PHI)+TEMP(3)*COSD(PHI)
      IF(UO{1}.EQ.O.AND.UO{3}.EQ.O.O)UO{1}=O1
      IF(TEMP{1}.EQ.O.O.AND.TEMP{3}.EQ.O.O)TEMP{1}=O1
      TALF=ARTAN2(UO{3},UO{1})*DEGPR
      ALF=AR*AN2(TEMP(3),TEMP{1})*DEGPR
      CALL DOTPRD(VBAR2,UO,UO,3)
      VBAR=VBAR/V$
      TBET=ARTAN2(UO{2},UO{1})*DEGPR
      BET=ARTAN2(TEMP(2),TEMP{1})*DEGPR
      MOC=VBAR/V$
      QS=Q*S
      CALL TAERO(TALF,TBET,MOC,RON,COEFF)
C      C THE COEFFICIENTS ARE WRT BODY AXIS/MULTIPLY BY DYNAMIC PRESSURE
C
      DO IO I=1,3
        TEMP(I)=COEFF(I)*QS
        TA(I)=COEFF(I+3)*QS*RL
        CONTINUE
C      C CONVERT THE FORCES IN THE AEROFAME TO THE STANDARD FRAME
C      C
      FA{1}=TEMP{1}*COSD(PHI)+TEMP(3)*SIND(PHI)
      FA{2}=TEMP{2}
      FA{3}=-TEMP{1}*SIND(PHI)+TEMP(3)*COSD(PHI)
C      C THESE TORQUES WRT THE CG, TRANSFER TO CRP
C      C
      CALL CRSPRD(TAP,FA,ARP)
      DO I5 I=1,3
        TA(I)=TA(I)-TAP(I)
        CONTINUE
      RETURN
      END

```

SUBROUTINE RE (TW,Q,TO,V,RN,EM,ALT,G,CP,SWIRE,TWEST,BP,TE)
THIS SUBROUTINE CALCULATES THE RADIATIVE EQUILIBRIUM TEMPERATURE
OF A SPHERICAL SURFACE. THE ARGUMENTS ARE DEFINED AS FOLLOWS:

OUTPUT:

TW = RADIATIVE EQUILIBRIUM TEMPERATURE IN DEG. R
Q = HEATING RATE IN BTU/FT**2 SEC OF THE SURFACE
BASED UPON THE ESTIMATED SURFACE TEMPERATURE
TO = FREE STREAM TEMPERATURE OF THE AIR AT THE SPECIFIED
ALTITUDE IN DEG. R.

INPUT:

V = VELOCITY IN FT/SEC
ALT = ALTITUDE OF VEHICLE (FT)
RN = NOSE RADIUS IN FT.
EM = SURFACE EMISSIVITY
G = ACCELERATION DUE TO GRAVITY
CP = SPECIFIC HEAT IN FT*LBF/(LBM*DEG R)
SWIRE = A VALUE GREATER THAN 1.0 INDICATES THAT THE SAME SURFACE
IS BEING USED AND THAT THE ITERATION PROCESS WILL START
AT THE PREVIOUSLY ITERATED VALUE OF K.
TWEST = THE ESTIMATED SURFACE TEMPERATURE IN DEG R
BP,TE = BAROMETRIC PRESSURE (IN.) AND SEA LEVEL TEMPERATURE
FOR A NON-STANDARD ATMOSPHERE

COMMON/CICCAL/LOCAL

COMMON/TEMP/TK

REAL KF,KT,WIN(3)

DATA DENSEA,E,SW/2.377E-3,0.476E-12,1./

DEFAULT VALUE OF CP IS 186.77 FT*LBF/(LBM*DEG R)

IF(CP.EQ.0.99999.OR.CP.EQ.0.) CP=186.77

CALCULATE THE FREE STREAM TEMPERATURE AND DENSITY,TK AND DENS ...

CALL ATMOS(VS,DENS,ALT,WIN,BP,TE,SW)

TO=TK

CALCULATE THE STAGNATION TEMPERATURE

TS=TO+V**2/(2*CP*G)

CALCULATE THE HEAT TRANSFER COEFFICIENT

H=0.1055*(SQRT(DENS/(DENSEA*RN)))*(0.0001*V)**1.15

THE EQUATIONS USED ARE AS FOLLOWS

TW = K*TS WHERE K**4 = B*(1-K) AND
B = H/(E*EM*TS**3)

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```

C C C
      B=H/(E*EM*TS**3)
      C C C
      ITERATE TO FIND THE VALUE OF K
      IF(B.GT.3.) GO TO 30
      KI=0.5
      IF(SWIRE.GT.1. AND. ICCAL.NE.1.) KI=KF
      20 AA=((1.-KI)*B)**0.25
      IF(AA.GT.0.85) AA=0.85
      KF=(AA*(KI*KI)*0.25/(1.-KI))/(1.*KI*0.25/(1.-KI))
      DIF=KI-KF
      IF(ABS(DIF).LT.1.OE-4) GO TO 60
      KI=KF
      GO TO 20
      30 KI=0.9
      IF(SWIRE.GT.1. AND. ICCAL.NE.1.) KI=KF
      40 KF=((1.-(KI**4)/B)+3.*KI/B)/(1.+3./B)
      DIF=KI-KF
      IF(ABS(DIF).LT.1.OE-4) GO TO 60
      KI=KF
      GO TO 40
      60 TW=KF*TS
      C C C C C
      CALCULATE THE HEATING RATE BASED UPON THE ESTIMATED
      SURFACE TEMPERATURE.
      Q=H*(TS-AMIN1(TWEST,TW))
      C C
      RETURN
      END

```

```

SUBROUTINE TAERO(ALPHA,BETA,VMACH,RON,COEFF)

THIS SUBROUTINE CALCULATES THE AERODYNAMIC COEFFICIENTS
BASED UPON A TABLE LOOK USING AERODATA PROVIDED FROM
SUBROUTINE AERO USING 21 DATA POINTS.

OUTPUTS:  COEFF(6) - VALUES ARE:
           CX= X FORCE COEFFICIENT, (+) FORWARD
           CY= Y FORCE COEFFICIENT
           CZ= Z FORCE COEFFICIENT, (+) DOWNWARD
           CL= YAWING MOMENT COEFFICIENT
           CM= PITCHING MOMENT COEFFICIENT (+) UPWARD
           CN= ROLLING MOMENT COEFFICIENT

INPUTS:   ALPHA - ANGLE OF ATTACK (DEGREES)
           BETA - SIDE SLIP ANGLE (DEGREES)
           VMACH - MACH NUMBER
           RON - A DUMMY PARAMETER WHICH CAN BE USED
                AT THE DISCRETION OF THE USER.
                IT WOULD TYPICALLY BE USED TO DISTINGUISH
                BETWEEN CERTAIN AERODATA SETS TO BE USED WITHIN
                SUBROUTINE AERO

REAL COEFF(6)
COMMON/CRON/AROS
COMMON/AERO1/CX(7,3,1)
COMMON/AERO2/CY(7,3,1)
COMMON/AERO3/CZ(7,3,1)
COMMON/AERO4/CL(7,3,1)
COMMON/AERO5/CM(7,3,1)
COMMON/AERO6/CN(7,3,1)
COMMON/AERPAR/RMACH(7),VALPHA(3),VBETA(1)
IF (RON.EQ..9999)RON=1.
AROS=RON
TBETA=ABS(BETA)

COEFF(1)=-TBLU3(VMACH,ALPHA,TBETA,RMACH,VALPHA,VBETA,
CX,1,1,-7,-3,-1,7,3,1)
COEFF(2)=TBLU3(VMACH,ALPHA,TBETA,RMACH,VALPHA,VBETA,
CY,1,1,-7,-3,-1,7,3,1)*SIGN(1,BETA)
COEFF(3)=-TBLU3(VMACH,ALPHA,TBETA,RMACH,VALPHA,VBETA,
CZ,1,1,-7,-3,-1,7,3,1)
COEFF(4)=TBLU3(VMACH,ALPHA,TBETA,RMACH,VALPHA,VBETA,
CL,1,1,-7,-3,-1,7,3,1)*SIGN(1,BETA)
COEFF(5)=TBLU3(VMACH,ALPHA,TBETA,RMACH,VALPHA,VBETA,
CM,1,1,-7,-3,-1,7,3,1)
COEFF(6)=TBLU3(VMACH,ALPHA,TBETA,RMACH,VALPHA,VBETA,
CN,1,1,-7,-3,-1,7,3,1)*SIGN(1,BETA)
RETURN
END

```

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CCC

APPENDIX B

MODEL FILE SOURCE CODE

This Appendix lists the source code for the model file used to simulate the escape concepts during orbital escape.

```

MODEL DESCRIPTION = HYPERVELOCITY AND ORBITER MODEL
*****
WITH ONLY ALPHA VS ALTITUDE CONTROL *****
*****
USING SUBROUTINE SE + GRAVITATIONAL CORRECTION
*****
FORCES + CENTRIPETAL FORCE
*****
FILE NAME = CAPORBT
ALPHABETIZE
*****
* *** ATMOSPHERE ***
*
LOCATION=010      AG
*
*****
* *** FORT 023--STATE VARIABLE INITIALIZATION
*
LOCATION=023      FORT      INPUTS=ESTSE,SRPSE,WTSTSE,USTSE
                      ADD VARIABLES=DEV(3,3),EVIR(3),DVR(3,3),ERRIR(3)
                      DER(3,3),ESTIRX(3),CI(3,3),VCATE(3)
                      DERINV(3,3),VACE(3),DERSCRP(3,3),ALT
                      ADD PARAMETERS=VAV,FPA,VCAT(3)
                      RADPD,DEGPR,EV(3),THR
FORTRAN STATEMENTS
IF(ICCASC.NE.1) GOTO 60
/CCGAS/=0/
ERRIR(1)=0
ERRIR(2)=THR
ERRIR(3)=0
DO 46 I=1,3
  EVIR(I)=EV(I)*RADPD
CONTINUE
CALL DIRCOS(DVR,ERRIR)
CALL DIRCOS(DEV,EVIR)
/DER/=DVR/*/DEV/
CALL COSDIR(ESTIRX,DER)
DO 48 I=1,3
  ESTSE(I)=ESTIRX(I)*DEGPR
VACE(1)=VAV*COSD(FPA)
VACE(2)=0
VACE(3)=-VAV*SIND(FPA)
/DERSCRP/=DER/
/CI/=1/
/DERINV/=DERSCRP/-1/CI/
/USTSE/=DER/*/VACE/
/USTSE/=USTSE/*/VCAT/
/VCATE/=DERINV/*/VCAT/
/TM SE/=VACE/*/VCATE/

C
C
60 CONTINUE
  ALT=-SRPSE(3)
*****
* *** CONTROLLED ANGLE OF ATTACK ***
*****
LOCATION=017      FUS
*****
LOCATION=045      FORT
                      INPUTS=FORT(ALT=S)
                      INPUTS=USTSE,S2,FU5

```



```

      ADD VARIABLES=HETRAT,SWIRE,TW,TW
      ADD PARAMETERS=RNOZ,EM,SPCH,TWEST,MOCSTOP
      *
FORTRAN STATEMENTS
      *
      IF(MOCAS.LE.MOCSTOP)ISTOP=1
      IF(ICCALC.EQ.1.OR.TIME.EQ.O.)THEN
        SWIRE=O.
      ELSE
        SWIRE=2.
      END IF
      CALL RE(TW,HETRAT,TO,VBAR,RNOZ,EM,ALT,GRV1,SPCH,SWIRE,TWEST,
            +BP AG,TE AG)
      *
      ** *** INTEGRATOR FOR HEATING
      ** *****
      LOCATION=063
      IN7 INPUTS=FORT(HETRAT=S)
      ****
      *** *** SEAT AXOS TRANSFPR,ATOPM - FOR RECLINE ***
      **
LOCATION=056 FORT INPUTS=GXASE,WSTSE
      ADD PARAMETERS=SRANG SSR,CSR
      ADD VARIABLES=GXR5(3),GXR51
      SRPSE1,SRPSE2,GXR52,GXR53
      *
FORTRAN STATEMENTS
      *
      IF(ICCALC.NE.1) GOTO 110
      SSR=SIND(SRANG)
      CSR=COSD(SRANG)
      CONTINUE
      110
      *
      GXRS{1}=GXASE{1}*CSR+GXASE(3)*SSR
      GXRS{2}=GXASE{2}
      GXRS{3}=-GXASE(1)*SSR+GXASE(3)*CSR
      GXRS1=GXR5{1}
      GXRS2=GXR5{2}
      GXRS3=GXR5{3}
      SRPSE1=SRPSE{1}
      SRPSE2=SRPSE{2}
      *
      *
END OF MODEL
PRINT

```

APPENDIX C

LIST OF DATA FOR GRAPHIC MODELS

This Appendix lists the data used to generate the graphic models of the single-place encapsulated seat and the dual-place encapsulated seat. These data must be used with the CAD/C software package using the instructions provided in Reference 3. These data are listed in the order given below. The filenames for the various data correspond to those used for storing these data on the 5 1/4 inch mini-flexible disc provided to USAF.

<u>Filename</u>	<u>Data Description</u>
SS3V119.CAD	Three-view file for the single-place encapsulated seat
SS2V119.DIM	Dimensions file for the single-place encapsulated seat
SEATXL.CAD	Subsystems location file for the single-place encapsulated seat
SEATXN.NOT	Subsystems note file for the single-place encapsulated seat
DS3V.CAD	Three-view file for the dual-place encapsulated seat
DS3V.DIM	Dimensions file for the dual-place encapsulated seat
DSEATXL.CAD	Subsystems location file for the dual-place encapsulated seat
DSEATXN.NOT	Subsystems note file for the dual-place encapsulated seat

**Data File SS3V119.CAD: Three-View File for the Single-Place
Encapsulated Seat**

"2.00", "", "IN", 1, 0, 0

487	161	56	0	1	0	0	0	0	0	0	0	0	0	0	0
10.42002	5.559975	2.384186E-08	0	0	0										
10.42002	3.639976	2.384186E-08	0	0	0										
8.500017	3.639976	2.384186E-08	0	0	0										
9.460016	5.290145	-1.192093E-08	0	0	0										
10.39003	3.760144	0	0	0	0										
8.740017	4.570145	0	0	0	0										
10.33002	3.700146	0	0	0	0										
9.430023	5.260147	0	0	0	0										
10.36003	3.730144	2.384186E-08	0	0	0										
8.770021	4.600145	0	0	0	0										
8.50002	3.670146	0	0	0	0										
10.30002	3.670146	-1.192093E-08	0	0	0										
11.32003	5.55998	0	0	0	0										
10.33002	3.579979	0	0	0	0										
8.500017	3.579979	2.384186E-08	0	0	0										
8.560011	3.579802	0	0	0	0										
8.110006	2.379799	0	0	0	0										
8.050009	2.379799	2.384186E-08	0	0	0										
7.93001	1.8398	0	0	0	0										
8.020008	1.809801	0	0	0	0										
7.975015	2.289801	0	0	0	0										
8.050013	2.289801	0	0	0	0										
8.110013	2.439803	0	0	0	0										
8.080013	2.364801	0	0	0	0										
9.22002	2.364801	-1.192093E-08	0	0	0										
9.295019	3.429802	0	0	0	0										
9.295019	3.3998	0	0	0	0										
10.16502	3.2948	0	0	0	0										
10.78002	5.4998	0	0	0	0										
10.72001	5.4998	0	0	0	0										
10.12001	3.429802	-3.576279E-08	0	0	0										
9.310017	3.519801	-1.192093E-08	0	0	0										
10.04501	3.369801	2.384186E-08	0	0	0										
9.265013	3.504802	0	0	0	0										
9.250012	3.4748	0	0	0	0										
9.265013	3.429802	0	0	0	0										
8.650011	2.364801	-1.192093E-08	0	0	0										
8.93501	3.384802	-1.192093E-08	0	0	0										
8.86001	3.414803	0	0	0	0										
8.890015	3.714802	2.384186E-08	0	0	0										
8.875013	3.744802	0	0	0	0										
8.845011	3.744802	-1.192093E-08	0	0	0										
8.830011	3.714802	0	0	0	0										
8.800013	3.444802	0	0	0	0										
9.355012	3.369801	0	0	0	0										
10.07501	3.264802	0	0	0	0										
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9.355012	2.949801	0	0	0	0			
10.28502	3.459801	-1.192093E-08	0	0	0			
10.52501	4.3148	-1.192093E-08	0	0	0			
10.90002	4.224801	0	0	0	0			
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9.565014	2.304799	-1.192093E-08	0	0	0			
9.05501	2.004798	0	0	0	0			
8.920011	2.1698	0	0	0	0			
9.430012	2.4698	0	0	0	0			
10.48002	3.369799	0	0	0	0			
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10.63002	4.7348	0	0	0	0			
10.97502	4.629798	0	0	0	0			
11.18502	5.559802	0	0	0	0			
10.58501	4.569799	0	0	0	0			
10.52501	4.4048	-1.192093E-08	0	0	0			
10.72001	4.329798	0	0	0	0			
10.79501	4.5398	0	0	0	0			
10.85501	5.454803	0	0	0	0			
10.75001	5.079803	0	0	0	0			
11.03501	5.0198	-3.576279E-08	0	0	0			
11.12501	5.3948	0	0	0	0			
10.99001	5.4248	0	0	0	0			
10.90001	5.049801	4.768372E-08	0	0	0			
10.79073	5.071231	0	0	0	0			
10.83144	5.062655	0	0	0	0			
10.87216	5.054086	0	0	0	0			
10.91287	5.045515	0	0	0	0			
10.95359	5.036945	0	0	0	0			
10.9943	5.028371	0	0	0	0			
10.91001	5.091466	0	0	0	0			
10.92001	5.133133	0	0	0	0			
10.93001	5.174799	4.768372E-08	0	0	0			
10.94001	5.216466	0	0	0	0			
10.95002	5.258133	0	0	0	0			
10.96001	5.2998	4.768372E-08	0	0	0			
10.97001	5.341466	4.768372E-08	0	0	0			
10.98001	5.383133	0	0	0	0			
10.76168	5.121468	0	0	0	0			
10.77335	5.163137	0	0	0	0			
10.78502	5.204799	0	0	0	0			
10.79668	5.246467	0	0	0	0			
10.80835	5.288134	4.768372E-08	0	0	0			
10.82001	5.329799	-3.576279E-08	0	0	0			
10.83168	5.371468	-3.576279E-08	0	0	0			
10.84335	5.413134	0	0	0	0			
11.04501	5.061468	0	0	0	0			
11.05501	5.103132	0	0	0	0			
11.06501	5.1448	-3.576279E-08	0	0	0			

11.07501	5.186468	-3.576279E-08	0	0	0
11.08502	5.228133	0	0	0	0
11.09501	5.2698	0	0	0	0
11.10501	5.311468	0	0	0	0
11.11501	5.353135	0	0	0	0
8.545011	1.899799	0	0	0	0
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8.545011	2.259799	0	0	0	0
8.36501	2.109801	0	0	0	0
8.545011	2.109801	0	0	0	0
8.545011	2.049799	0	0	0	0
8.36501	2.049799	0	0	0	0
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9.342114	2.629705	0	0	0	0
9.342114	2.483905	0	0	0	0
9.609411	2.483905	0	0	0	0
9.609411	2.532504	0	0	0	0
9.755215	2.532504	-1.192093E-08	0	0	0
9.755215	2.678303	-1.192093E-08	0	0	0
9.706612	2.678303	0	0	0	0
9.706612	2.581104	0	0	0	0
9.609411	2.581104	0	0	0	0
9.439312	2.629705	0	0	0	0
9.439312	2.678303	0	0	0	0
9.390713	2.678303	0	0	0	0
9.390713	2.629705	0	0	0	0
9.320631	1.876584	0	0	0	0
9.766515	2.27806	0	0	0	0
9.481221	1.698227	0	0	0	0
9.927113	2.099705	0	0	0	0
10.66824	3.224183	0	0	0	0
10.26676	2.778297	0	0	0	0
10.84659	3.063593	0	0	0	0
10.44511	2.617706	-1.192093E-08	0	0	0
10.18623	2.273736	0	0	0	0
10.27108	2.35859	0	0	0	0
10.44078	2.273736	0	0	0	0
10.27108	2.104031	0	0	0	0
10.19153	2.480566	0	0	0	0
10.27108	2.613148	0	0	0	0
10.31881	2.586632	-1.192093E-08	0	0	0
10.23926	2.45405	0	0	0	0
10.09077	2.305554	0	0	0	0
9.958187	2.226006	-1.192093E-08	0	0	0
9.931667	2.273736	2.384186E-08	0	0	0
10.05894	2.347983	0	0	0	0
9.894545	2.056302	0	0	0	0
9.974093	2.114638	0	0	0	0

10.00592	2.07221	0	0	0	0
9.926363	2.013873	0	0	0	0
9.995308	2.082818	-1.192093E-08	0	0	0
10.21274	2.215399	-1.192093E-08	0	0	0
10.20744	2.231309	0	0	0	0
9.990004	2.098727	0	0	0	0
10.48852	2.65027	0	0	0	0
10.43017	2.570721	0	0	0	0
10.47261	2.538901	0	0	0	0
10.53094	2.618451	0	0	0	0
10.462	2.549509	-1.192093E-08	0	0	0
10.32941	2.33207	-1.192093E-08	0	0	0
10.31351	2.337374	0	0	0	0
10.44609	2.55481	2.384186E-08	0	0	0
9.841512	2.003264	-1.192093E-08	0	0	0
10.01122	2.151759	0	0	0	0
10.06425	2.077514	0	0	0	0
9.894545	1.92902	-1.192093E-08	0	0	0
10.04834	2.104031	0	0	0	0
10.19683	2.252522	0	0	0	0
10.03243	2.119938	0	0	0	0
10.39306	2.533597	4.768372E-08	0	0	0
10.54155	2.703304	0	0	0	0
10.6158	2.65027	0	0	0	0
10.4673	2.480566	0	0	0	0
10.42487	2.512384	-1.192093E-08	0	0	0
10.29229	2.347982	0	0	0	0
10.44078	2.496474	-1.192093E-08	0	0	0
8.725014	1.584803	0	0	0	0
8.785011	1.644802	0	0	0	0
9.460011	1.644802	0	0	0	0
10.16501	2.049804	2.384186E-08	0	0	0
10.16501	1.989803	2.384186E-08	0	0	0
9.460011	1.584803	0	0	0	0
10.97501	3.909803	0	0	0	0
10.97501	3.144802	0	0	0	0
10.57001	2.3948	4.768372E-08	0	0	0
10.51001	2.3948	-1.192093E-08	0	0	0
10.91501	3.144802	0	0	0	0
10.91501	3.804804	0	0	0	0
11.06501	4.089803	-3.576279E-08	0	0	0
10.46501	1.509803	0	0	0	0
10.70502	1.449803	-3.576279E-08	0	0	0
11.27501	4.029804	4.768372E-08	0	0	0
6.497508	2.292805	0	0	0	0
7.217512	5.562805	0	0	0	0
5.057513	5.562805	0	0	0	0
5.777512	2.292805	0	0	0	0
5.057513	3.012805	0	0	0	0

7.217512	3.012805	0	0	0	0
7.217512	2.232806	0	0	0	0
5.777512	1.512805	0	0	0	0
5.057513	2.232803	0	0	0	0
6.49751	1.512805	0	0	0	0
7.217513	3.582804	0	0	0	0
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7.097513	4.797806	0	0	0	0
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6.407509	5.487803	0	0	0	0
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6.767513	4.737803	0	0	0	0
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6.299513	5.487803	0	0	0	0
6.407509	5.127805	0	0	0	0
6.407509	5.217805	0	0	0	0
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6.479512	4.977804	0	0	0	0
6.551512	4.917805	0	0	0	0
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6.695511	4.797804	0	0	0	0
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6.767513	3.489803	0	0	0	0
6.767513	3.585803	0	0	0	0
6.767513	3.681805	0	0	0	0
6.767513	3.777804	0	0	0	0
6.767513	3.873803	0	0	0	0
6.767513	3.969802	0	0	0	0
6.767513	4.065805	0	0	0	0
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6.767513	4.353803	0	0	0	0
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5.622057	3.507803	0	0	0	0
5.736603	3.507803	0	0	0	0
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6.080242	3.507803	0	0	0	0
6.194788	3.507803	0	0	0	0
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6.538423	3.507803	0	0	0	0
6.652971	3.507803	0	0	0	0
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10.42003	6.239982	0	0	0	0
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10.81752	6.959976	0	0	0	0
11.20752	6.959976	0	0	0	0
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9.227525	6.569978	0	0	0	0
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10.42753	6.569978	0	0	0	0
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10.66752	6.569978	0	0	0	0
8.647012	1.579802	0	0	0	0
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10.74163	2.712601	2.384186E-08	0	0	0
9.456033	3.051981	0	0	0	0
11.18643	8.287181	0	0	0	0
11.18737	6.116557	0	0	0	0
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9.863233	3.639976	2.384186E-08	0	0	0
10.02323	3.868013	0	0	0	0
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10.15808	4.062379	2.384186E-08	0	0	0
10.1859	4.095979	0	0	0	0
9.884033	3.670146	-1.192093E-08	0	0	0
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6.940014	5.399996	0	0	0	0
7.22002	5.399982	0	0	0	0
7.124021	5.711982	0	0	0	0
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5.344019	5.56282	-1.907349E-07	0	0	0
6.936019	5.56282	0	0	0	0
10.88002	8.299983	0	0	0	0
11.04002	7.819984	0	0	0	0
11.24002	7.819984	0	0	0	0
11.24002	6.579982	0	0	0	0
11.05001	6.399999	0	0	0	0
10.88002	6.099982	0	0	0	0
11.24002	5.559982	0	0	0	0
11.24002	5.699983	0	0	0	0
10.94002	5.719984	0	0	0	0
10.85886	5.535255	0	0	0	0
11.06002	5.399982	0	0	0	0
10.8844	8.111954	0	0	0	0
11.04458	7.824434	0	0	0	0
11.0395	6.3902	0	0	0	0
10.89142	6.237634	0	0	0	0
10.88002	7.979983	0	0	0	0
10.89001	6.239999	0	0	0	0
11.01694	5.399983	0	0	0	0
11.50003	5.39998	0	0	0	0
11.90003	5.39998	0	0	0	0
11.90003	5.699978	0	0	0	0
11.50003	5.699978	0	0	0	0
10.88003	5.559977	0	0	0	0
10.94003	5.699978	0	0	0	0
10.88003	5.589979	0	0	0	0
11.04003	5.399982	0	0	0	0
10.88003	5.559982	0	0	0	0
10.93321	6.239188	0	0	0	0
10.93321	6.160789	0	0	0	0
10.93321	8.239184	0	0	0	0
10.93321	8.160785	0	0	0	0
6.320017	1.519986	0	0	0	0
6.320017	2.439986	0	0	0	0
5.920015	2.439986	0	0	0	0
5.920015	1.519986	0	0	0	0
7.920015	6.999982	0	0	0	0
8.040016	6.999982	0	0	0	0
8.040016	7.399984	0	0	0	0
7.880014	7.399984	0	0	0	0
10.04001	2.599984	0	0	0	0
10.12001	2.679984	0	0	0	0
9.520014	3.159984	0	0	0	0
11.38001	5.279985	0	0	0	0
11.60001	5.219985	0	0	0	0
11.48001	6.679985	-.2	0	0	0
11.26001	6.679985	-.2	0	0	0

11.24001	6.479985	-.2	0	0	0
11.48001	6.479985	-.2	0	0	0
11.48001	7.719986	-.2	0	0	0
11.26001	7.719986	-.2	0	0	0
11.24001	7.919986	-.2	0	0	0
11.48001	7.919986	-.2	0	0	0
7.920013	6.999986	-.2	0	0	0
7.880013	6.999986	-.2	0	0	0
5.920011	1.512805	0	0	0	0
6.320011	1.512805	0	0	0	0
6.320011	2.292805	0	0	0	0
5.920011	2.292805	0	0	0	0
6.320011	1.509986	-.2	0	0	0
5.920011	1.509986	-.2	0	0	0
9.523602	3.149986	0	0	0	0
9.52001	3.149986	-.2	0	0	0
9.460012	3.049985	-.2	0	0	0
10.11001	2.679986	-.2	0	0	0
10.04001	2.599986	-.2	0	0	0
8.89003	8.27998	0	0	0	0
7.888099	6.997579	0	0	0	0
8.008102	7.402392	0	0	0	0
8.008099	6.997579	0	0	0	0
11.34001	5.279995	0	0	0	0
11.56001	5.219995	0	0	0	0
9.980017	2.539994	0	0	0	0
10.11002	2.659995	0	0	0	0
10.03002	2.579994	0	0	0	0
9.470017	3.069994	0	0	0	0
7.020015	5.719996	0	0	0	0
11.22001	6.399999	0	0	0	0
11.00001	6.399999	0	0	0	0
10.99867	6.118671	0	0	0	0
11.22001	8	0	0	0	0
10.88315	8.15972	0	0	0	0
10.97001	7.93	0	0	0	0
10.88001	6.42	0	0	0	0
10.98001	6.489999	0	0	0	0
11.03002	6.57	0	0	0	0
11.0003	8.282818	0	0	0	0
11.00711	7.995118	0	0	0	0
10.88001	6.279999	0	0	0	0
10.88001	6.238663	0	0	0	0
10.94922	8.215999	0	0	0	0
10.94922	8.063998	0	0	0	0
10.94922	6.335998	0	0	0	0
10.94922	6.183998	0	0	0	0
10.89	8.000004	0	0	0	0
3	372	3	0	0	0

4	376	3	0	0	0	0	0
6	373	3	0	0	0	0	0
8	375	3	0	0	0	0	0
10	374	3	0	0	0	0	0
11	377	3	0	0	0	0	0
1	416	3	0	0	0	0	0
15	371	3	0	0	0	0	0
15	3	3	0	0	0	0	0
21	15	3	0	0	0	0	0
179	178	3	0	0	0	0	0
174	179	3	0	0	0	0	0
182	367	3	0	0	0	0	0
195	191	6	0	0	0	0	0
194	192	6	0	0	0	0	0
193	451	6	0	0	0	0	0
196	195	6	0	0	0	0	0
197	448	6	0	0	0	0	0
198	194	6	0	0	0	0	0
201	200	3	0	0	0	0	0
202	203	3	0	0	0	0	0
205	204	3	0	0	0	0	0
206	207	3	0	0	0	0	0
209	208	3	0	0	0	0	0
211	224	12	0	0	0	0	0
211	228	12	0	0	0	0	0
213	232	12	0	0	0	0	0
214	256	12	0	0	0	0	0
214	266	12	0	0	0	0	0
215	280	12	0	0	0	0	0
216	284	12	0	0	0	0	0
217	220	12	0	0	0	0	0
219	246	12	0	0	0	0	0
221	222	12	0	0	0	0	0
223	210	12	0	0	0	0	0
225	226	12	0	0	0	0	0
227	210	12	0	0	0	0	0
229	230	12	0	0	0	0	0
231	212	12	0	0	0	0	0
233	234	12	0	0	0	0	0
235	236	12	0	0	0	0	0
237	238	12	0	0	0	0	0
239	240	12	0	0	0	0	0
241	242	12	0	0	0	0	0
243	244	12	0	0	0	0	0
245	212	12	0	0	0	0	0
247	248	12	0	0	0	0	0
249	250	12	0	0	0	0	0
251	252	12	0	0	0	0	0
253	254	12	0	0	0	0	0

255	218	12	0	0	0	0	0
257	258	12	0	0	0	0	0
259	260	12	0	0	0	0	0
261	262	12	0	0	0	0	0
263	264	12	0	0	0	0	0
265	213	12	0	0	0	0	0
267	268	12	0	0	0	0	0
269	270	12	0	0	0	0	0
271	272	12	0	0	0	0	0
273	274	12	0	0	0	0	0
275	276	12	0	0	0	0	0
277	278	12	0	0	0	0	0
279	215	12	0	0	0	0	0
281	282	12	0	0	0	0	0
283	216	12	0	0	0	0	0
285	286	12	0	0	0	0	0
287	217	12	0	0	0	0	0
292	293	3	0	0	0	0	0
294	295	3	0	0	0	0	0
297	296	3	0	0	0	0	0
300	301	3	0	0	0	0	0
303	302	3	0	0	0	0	0
304	342	12	0	0	0	0	0
305	310	12	0	0	0	0	0
307	332	12	0	0	0	0	0
304	352	12	0	0	0	0	0
308	322	12	0	0	0	0	0
311	312	12	0	0	0	0	0
313	314	12	0	0	0	0	0
315	316	12	0	0	0	0	0
316	317	12	0	0	0	0	0
317	318	12	0	0	0	0	0
319	320	12	0	0	0	0	0
321	306	12	0	0	0	0	0
323	324	12	0	0	0	0	0
325	326	12	0	0	0	0	0
327	328	12	0	0	0	0	0
329	330	12	0	0	0	0	0
331	309	12	0	0	0	0	0
333	334	12	0	0	0	0	0
335	336	12	0	0	0	0	0
337	338	12	0	0	0	0	0
339	340	12	0	0	0	0	0
341	306	12	0	0	0	0	0
343	344	12	0	0	0	0	0
345	346	12	0	0	0	0	0
347	348	12	0	0	0	0	0
349	350	12	0	0	0	0	0
351	305	12	0	0	0	0	0

353	354	12	0	0	0	0	0
355	356	12	0	0	0	0	0
357	358	12	0	0	0	0	0
358	359	12	0	0	0	0	0
360	361	12	0	0	0	0	0
362	363	12	0	0	0	0	0
363	307	12	0	0	0	0	0
364	174	3	0	0	0	0	0
366	365	3	0	0	0	0	0
178	182	3	0	0	0	0	0
21	368	6	0	0	0	0	0
378	1	3	0	0	0	0	0
379	380	3	0	0	0	0	0
380	383	3	0	0	0	0	0
379	384	3	0	0	0	0	0
386	385	3	0	0	0	0	0
386	389	3	0	0	0	0	0
387	388	3	0	0	0	0	0
385	390	3	0	0	0	0	0
392	393	6	0	0	0	0	0
61	13	6	0	0	0	0	0
400	401	3	0	0	0	0	0
417	401	3	0	0	0	0	0
418	417	3	0	0	0	0	0
420	418	3	0	0	0	0	0
419	404	3	0	0	0	0	0
425	426	3	0	0	0	0	0
427	426	3	0	0	0	0	0
428	427	3	0	0	0	0	0
429	430	3	0	0	0	0	0
430	431	3	0	0	0	0	0
432	431	3	0	0	0	0	0
439	438	4	0	0	0	0	0
440	441	4	0	0	0	0	0
443	442	4	0	0	0	0	0
444	445	4	0	0	0	0	0
447	446	3	0	0	0	0	0
449	199	6	0	0	0	0	0
450	190	6	0	0	0	0	0
453	452	3	0	0	0	0	0
454	61	6	0	0	0	0	0
456	455	3	0	0	0	0	0
187	463	4	0	0	0	0	0
463	464	4	0	0	0	0	0
188	464	4	0	0	0	0	0
187	188	4	0	0	0	0	0
435	466	3	0	0	0	0	0
467	466	3	0	0	0	0	0
468	467	3	0	0	0	0	0

469	381	3	0	0	0	0	0	0											
471	470	3	0	0	0	0	0	0											
482	481	3	0	0	0	0	0	0											
472	370	3	0	0	0	0	0	0											
480	473	3	0	0	0	0	0	0											
474	405	3	0	0	0	0	0	0											
479	369	3	0	0	0	0	0	0											
475	395	3	0	0	0	0	0	0											
476	477	3	0	0	0	0	0	0											
477	478	3	0	0	0	0	0	0											
298	369	6	0	0	0	0	0	0											
299	370	6	0	0	0	0	0	0											
487	475	3	0	0	0	0	0	0											
10.42002	3.639975	2.384186E-08	1	1.570796	2.380054	0	0	0	0	0									
12.34003	3.639975	0																	
10.42002	5.559975	2.384186E-08																	
6.82002	5.679983	0	6	5.110262	6.256524	0	0	0	0	0									
11.31081	5.679983	0																	
6.82002	10.17078	0																	
8.40147	2.018364	0	6	2.574772	5.112052	0	0	0	0	0									
8.905613	2.018364	0																	
8.40147	2.522506	0																	
10.42002	3.639975	2.384186E-08	7	2.380054	2.593831	0	0	0	0	0									
12.34003	3.639975	0																	
10.42002	5.559975	2.384186E-08																	
10.42002	3.639975	2.384186E-08	1	2.593831	3.141592	0	0	0	0	0									
12.34003	3.639975	0																	
10.42002	5.559975	2.384186E-08																	
8.90501	4.805302	0	1	4.061312	.8902763	0	0	0	0	0									
9.10302	4.805302	0																	
8.90501	5.003307	0																	
5.777512	3.012805	0	6	3.141592	4.712388	0	0	0	0	0									
6.49751	3.012805	0																	
5.777512	3.732804	0																	
6.497508	3.012805	0	6	-1.570796	0	0	0	0	0	0									
7.217508	3.012805	0																	
6.497508	3.732804	0																	
5.777512	2.232803	0	6	3.141592	4.712388	0	0	0	0	0									
6.497513	2.232803	0																	
5.777512	2.952804	0																	
6.49751	2.232803	0	6	-1.570796	9.321062E-07	0	0	0	0	0									
7.217512	2.232803	0																	
6.49751	2.952804	0																	
6.137511	4.797804	0	3	0	3.141592	0	0	0	0	0									
7.097515	4.797804	0																	
6.137511	5.565807	0																	
6.137511	4.122804	0	3	0	3.141592	0	0	0	0	0									
7.097513	4.122804	0																	
6.137511	4.602803	0																	

6.137511	4.092805	0	3	0	3.141592	0	0	0	0	0
7.097513	4.092805	0								
6.137511	4.572802	0								
6.137511	4.632803	0	3	0	3.141592	0	0	0	0	0
7.09748	4.632803	0								
6.137511	5.292806	0								
6.137511	4.602802	0	3	0	3.141592	0	0	0	0	0
7.09748	4.602802	0								
6.137511	5.262803	0								
6.137511	4.797804	0	1	0	0	0	0	0	0	0
6.437511	4.797804	0								
6.137511	4.947805	0								
9.940027	7.199977	0	3	0	3.141592	0	0	0	0	0
9.940027	8.159979	0								
9.460026	7.199977	0								
9.880025	7.199978	0	3	0	3.141592	0	0	0	0	0
9.880025	8.159979	0								
9.400026	7.199978	0								
9.430027	7.19998	0	3	0	3.141592	0	0	0	0	0
9.430027	8.159953	0								
8.770027	7.19998	0								
9.400028	7.19998	0	3	0	3.141592	0	0	0	0	0
9.400028	8.159953	0								
8.740029	7.19998	0								
9.280026	7.19998	0	3	0	3.141592	0	0	0	0	0
9.280026	8.159987	0								
8.512022	7.19998	0								
9.370023	7.199987	0	3	0	3.141592	0	0	0	0	0
9.370023	8.279991	0								
8.506018	7.199987	0								
9.010025	7.199978	0	6	0	1.382262	0	0	0	0	0
9.010025	8.27998	0								
7.990026	7.199978	0								
8.89003	7.199978	0	6	0	1.382262	0	0	0	0	0
8.89003	8.27998	0								
7.870026	7.199978	0								
10.41252	7.207475	0	3	0	.6045202	0	0	0	0	0
10.41253	6.24748	0								
11.23752	7.207479	0								
10.02252	7.199978	0	3		1.316958	1.824634	0	0	0	0
10.02252	6.239978	0								
10.84752	7.199978	0								
8.935024	7.199973	0	1	0	0	0	0	0	0	0
8.935024	7.499975	0								
8.785025	7.199973	0								
6.829633	7.199973	0	6	0	.2445484	0	0	0	0	0
11.32003	7.199973	0								
6.829633	11.69038	0								
6.829633	7.199973	0	6		6.039507	0	0	0	0	0

11.32003	7.199973	0								
6.829633	11.69038	0								
7.124021	5.615984	0	3	0	1.570796	0	0	0	0	0
7.22002	5.615984	0								
7.124021	5.711982	0								
7.036016	5.615997	0	3		1.570796	3.141592	0	0	0	0
7.132017	5.615997	0								
7.036016	5.711998	0								
5.15602	5.615984	4.768372E-08	3	0	1.570796	0	0	0	0	0
5.06002	5.615984	0								
5.15602	5.711982	4.768372E-08								
5.244016	5.615999	-4.768376E-08	3		1.570796	3.141592	0	0	0	0
5.148016	5.615999	-7.152561E-08								
5.244016	5.711998	-4.768376E-08								
10.41252	7.207475	0	3		2.528041	3.141592	0	0	0	0
10.41253	6.24748	0								
11.23752	7.207479	0								
10.41252	7.207475	0	3		.8448392	2.268768	0	0	0	0
10.41253	6.24748	0								
11.23752	7.207479	0								
11.04003	5.559982	0	3		3.141592	4.712412	0	0	0	0
11.20003	5.559982	0								
11.04003	5.719983	0								
11.01003	5.499979	0	4	0	0	0	0	0	0	0
11.07003	5.499979	0								
11.01003	5.559979	0								
11.01003	5.499979	0	4	0	0	0	0	0	0	0
11.04003	5.499979	0								
11.01003	5.529979	0								
11.48001	7.819986	-.2	4	0	0	0	0	0	0	0
11.58001	7.819986	-.2								
11.48001	7.919986	-.2								
11.48001	6.579985	-.2	4	0	0	0	0	0	0	0
11.58001	6.579985	-.2								
11.48001	6.679985	-.2								
8.89003	7.199978	0	3		1.382262	1.759318	0	0	0	0
8.89003	8.27998	0								
7.870026	7.199978	0								
8.89003	7.199978	0	6		1.759318	3.141592	0	0	0	0
8.89003	8.27998	0								
7.870026	7.199978	0								
9.010025	7.199978	0	16		1.382262	1.759318	0	0	0	0
9.010025	8.27998	0								
7.990026	7.199978	0								
9.010025	7.199978	0	6		1.759318	3.141592	0	0	0	0
9.010025	8.27998	0								
7.990026	7.199978	0								
5.200015	5.639995	0	4	0	0	0	0	0	0	0
5.260015	5.639995	0								

5.200015	5.699997	0									
5.200015	5.619995	0	4	0	0	0	0	0	0	0	
5.230015	5.619995	0									
5.200015	5.649995	0									
7.080015	5.619995	0	4	0	0	0	0	0	0	0	
7.110015	5.619995	0									
7.080015	5.649995	0									
7.080015	5.639995	0	4	0	0	0	0	0	0	0	
7.140016	5.639995	0									
7.080015	5.699997	0									
11.00311	8.162851	0	3	1.594229	3.167698	0	0	0	0	0	
11.12311	8.162851	0									
11.00311	8.282852	0									
11.00436	8.115086	0	3	-3.115486	-1.547881	0	0	0	0	0	
11.12436	8.115086	0									
11.00436	8.235086	0									
11.00001	6.279999	0	3	1.570796	3.141592	0	0	0	0	0	
11.12001	6.279999	0									
11.00001	6.399999	0									
11.00001	6.238663	0	3	3.141592	4.70119	0	0	0	0	0	
11.12001	6.238663	0									
11.00001	6.358663	0									
10.94002	8.139998	0	4	0	0	0	0	0	0	0	
10.94002	8.059998	0									
10.97202	8.139998	0									
10.97202	8.139998	0	4	3.785093	5.639682	0	0	0	0	0	
10.97202	8.044998	0									
11.01002	8.139998	0									
10.94002	6.259998	0	4	0	0	0	0	0	0	0	
10.94002	6.179998	0									
10.97202	6.259998	0									
10.97202	6.259998	0	4	3.785093	5.639682	0	0	0	0	0	
10.97202	6.164998	0									
11.01002	6.259998	0									
0	0	0	0	0							

**Data File SS2V119.DIM: Dimensions File for the Single-Place
Encapsulated Seat**

```
"2.00","ss3v119.CAD","IN",1,0,0
1 192 197 1 1 -.657 .037 0 0 0 0 0 0 0
.15,.129,0,2,3,0,0,"65"
2 432 289 1 1 3.42 1.5 0 0 0 0 0 0 0
.15,.129,0,2,3,0,0,"60"
1 288 289 1 1 .78 2.13 0 0 0 0 0 0 0
.15,.129,0,2,3,0,0,"36"
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**Data File SEATXL.CAD: Subsystems Location File for the Single-Place
Encapsulated Seat**

"2.00", "", "IN", 1, 0, 0

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9.437512	8.195282	2.980232E-08	0	0	0										
9.437512	4.995285	2.980232E-08	0	0	0										
6.237516	4.995285	2.980232E-08	0	0	0										
7.837513	7.745566	-2.980232E-08	0	0	0										
9.387523	5.195565	0	0	0	0										
6.637513	6.545566	0	0	0	0										
9.287513	5.095568	0	0	0	0										
7.787523	7.695566	0	0	0	0										
9.337524	5.145566	2.980232E-08	0	0	0										
6.687513	6.595567	0	0	0	0										
6.237518	5.045566	0	0	0	0										
9.237513	5.045566	-2.980232E-08	0	0	0										
10.93752	8.195293	0	0	0	0										
9.287513	4.895291	0	0	0	0										
6.237516	4.895291	2.980232E-08	0	0	0										
6.337503	4.894993	0	0	0	0										
5.587503	2.894991	0	0	0	0										
5.487501	2.894991	2.980232E-08	0	0	0										
5.287502	1.994992	0	0	0	0										
5.437499	1.944991	0	0	0	0										
5.36251	2.744994	0	0	0	0										
5.487509	2.744994	0	0	0	0										
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7.437513	2.869994	-2.980232E-08	0	0	0										
7.562512	4.644995	0	0	0	0										
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9.012513	4.419993	0	0	0	0										
10.03751	8.094992	0	0	0	0										
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8.937503	4.644994	-5.960465E-08	0	0	0										
7.587513	4.794992	-2.980232E-08	0	0	0										
8.812503	4.544992	2.980232E-08	0	0	0										
7.512503	4.769994	0	0	0	0										
7.487503	4.719994	0	0	0	0										
7.512503	4.644994	0	0	0	0										
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6.962503	4.569994	-2.980232E-08	0	0	0										
6.837503	4.619995	0	0	0	0										
6.887503	5.119995	2.980232E-08	0	0	0										
6.862503	5.169994	0	0	0	0										
6.812503	5.169994	-2.980232E-08	0	0	0										
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6.737503	4.669994	0	0	0	0										
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8.862503	3.844993	0	0	0	0
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9.6125	6.119992	-2.980232E-08	0	0	0
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9.6125	4.694993	-2.980232E-08	0	0	0
8.012503	2.769991	-2.980232E-08	0	0	0
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10.36251	6.644991	0	0	0	0
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9.6125	6.269993	-2.980232E-08	0	0	0
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9.9875	7.394993	0	0	0	0
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10.19108	7.352133	0	0	0	0
10.25893	7.337847	0	0	0	0
10.32679	7.323563	0	0	0	0
10.39464	7.309276	0	0	0	0
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10.2875	7.553322	5.960465E-08	0	0	0
10.30417	7.622766	0	0	0	0
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10.00695	7.464436	0	0	0	0
10.02639	7.533882	0	0	0	0
10.04584	7.603321	0	0	0	0
10.06528	7.67277	0	0	0	0
10.08473	7.742212	5.960465E-08	0	0	0
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10.12362	7.881103	-5.960465E-08	0	0	0
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10.52917	7.572767	-5.960465E-08	0	0	0
10.54584	7.642212	0	0	0	0
10.5625	7.711657	0	0	0	0
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10.59583	7.850549	0	0	0	0
6.312499	2.09499	0	0	0	0
6.912503	2.09499	0	0	0	0
6.912503	2.69499	0	0	0	0
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6.312499	2.34499	0	0	0	0
6.012502	2.34499	0	0	0	0
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6.1455	1.999995	0	0	0	0
6.1455	2.080994	0	0	0	0
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8.616003	2.428169	0	0	0	0
9.8512	4.302298	0	0	0	0
9.182073	3.559153	0	0	0	0
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9.479333	3.291501	-2.980232E-08	0	0	0
9.047854	2.718217	0	0	0	0
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9.472123	2.718218	0	0	0	0
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9.056693	3.062933	0	0	0	0
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8.623594	2.718217	2.980232E-08	0	0	0
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8.720823	2.426537	0	0	0	0			
9.55167	3.345776	0	0	0	0			
9.454443	3.213193	0	0	0	0			
9.52515	3.160159	0	0	0	0			
9.62238	3.292742	0	0	0	0			
9.50747	3.177837	-2.980232E-08	0	0	0			
9.286503	2.815445	-2.980232E-08	0	0	0			
9.259993	2.824284	0	0	0	0			
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8.818043	2.435374	0	0	0	0			
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6.612503	1.569996	0	0	0	0			
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7.837503	1.669995	0	0	0	0			
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9.91251	1.344996	-5.960465E-08	0	0	0			
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10.26	8.429997	0	0	0	0			
10.2	8.249997	0	0	0	0			

10.46	7.989998	0	0	0	0
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10.2	8.249997	0	0	0	0
10.46	8.339997	0	0	0	0
10.43	8.259996	0	0	0	0
10.62	8.279997	0	0	0	0
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10.82	8.359997	0	0	0	0
10.95	7.449996	0	0	0	0
11.3	7.299995	0	0	0	0
7.600004	3.749997	0	0	0	0
7.650004	3.099997	0	0	0	0
8.300003	3.099997	0	0	0	0
8.300003	3.749997	0	0	0	0
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5.900002	3.799997	0	0	0	0
.5	.5	0	0	0	0
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4	8.499998	0	0	0	0
7.3	7.499998	0	0	0	0
6.8	6.999999	0	0	0	0
3.500001	7.299998	0	0	0	0
3.500001	6.099999	0	0	0	0
6.100001	4.999999	0	0	0	0
6.6	4.499999	0	0	0	0
3.500001	5.199999	0	0	0	0
3.500001	4.199999	0	0	0	0
6.300001	4	0	0	0	0
6.100001	3.299999	0	0	0	0
4.100001	3.499999	0	0	0	0
3.900001	2.299999	0	0	0	0
5.800001	2.499999	0	0	0	0
4.700001	2.699999	0	0	0	0
3.700001	1.499999	0	0	0	0
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8.900002	8.9	0	0	0	0
9.800001	8.400001	0	0	0	0
10.7	8.500001	0	0	0	0
11.7	8.900003	0	0	0	0
11.7	8.000003	0	0	0	0
11.7	7.100003	0	0	0	0
10.20001	7.100003	0	0	0	0
11.70001	6.300003	0	0	0	0
9.900009	6.500002	0	0	0	0
11.70001	5.300003	0	0	0	0
9.10001	4.600002	0	0	0	0
11.70001	4.200003	0	0	0	0
8.400007	4.100003	0	0	0	0
8.100006	3.500003	0	0	0	0

11.7	3.500003	0	0	0	0	
11.7	2.600003	0	0	0	0	
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9.800005	1.800003	0	0	0	0	0
11.7	1.500003	0	0	0	0	0
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3	2	3	0	0	0	0
4	5	3	0	0	0	0
6	7	3	0	0	0	0
8	9	3	0	0	0	0
10	9	3	0	0	0	0
11	12	3	0	0	0	0
1	13	3	0	0	0	0
15	14	3	0	0	0	0
15	3	3	0	0	0	0
21	15	3	0	0	0	0
22	16	3	0	0	0	0
22	23	3	0	0	0	0
24	25	2	0	0	0	0
25	26	2	0	0	0	0
26	28	2	0	0	0	0
28	29	2	0	0	0	0
30	29	2	0	0	0	0
31	30	2	0	0	0	0
32	33	2	0	0	0	0
34	32	2	0	0	0	0
35	34	2	0	0	0	0
35	36	2	0	0	0	0
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16	38	2	0	0	0	0
39	40	2	0	0	0	0
41	40	2	0	0	0	0
42	41	2	0	0	0	0
43	42	2	0	0	0	0
44	43	2	0	0	0	0
45	46	5	0	0	0	0
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48	47	5	0	0	0	0
48	45	5	0	0	0	0
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63	64	5	0	0	0	0
64	65	5	0	0	0	0
67	86	2	0	0	0	0
67	72	2	0	0	0	0
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77	68	2	0	0	0	0	0
79	80	2	0	0	0	0	0
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83	84	2	0	0	0	0	0
85	70	2	0	0	0	0	0
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91	92	2	0	0	0	0	0
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99	100	2	0	0	0	0	0
101	69	2	0	0	0	0	0
111	110	5	0	0	0	0	0
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112	113	5	0	0	0	0	0
113	110	5	0	0	0	0	0
114	115	5	0	0	0	0	0
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124	125	4	0	0	0	0	0
126	127	4	0	0	0	0	0
129	128	4	0	0	0	0	0
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132	133	4	0	0	0	0	0
133	134	4	0	0	0	0	0
135	134	4	0	0	0	0	0
132	135	4	0	0	0	0	0
136	137	4	0	0	0	0	0
139	138	4	0	0	0	0	0
141	140	4	0	0	0	0	0
142	143	4	0	0	0	0	0
160	161	4	0	0	0	0	0
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160	163	4	0	0	0	0	0
164	150	4	0	0	0	0	0
166	165	4	0	0	0	0	0
167	168	4	0	0	0	0	0

168	169	4	0	0	0	0	0
170	169	4	0	0	0	0	0
167	170	4	0	0	0	0	0
172	171	4	0	0	0	0	0
158	173	4	0	0	0	0	0
174	175	3	0	0	0	0	0
175	176	3	0	0	0	0	0
176	177	3	0	0	0	0	0
178	177	3	0	0	0	0	0
179	178	3	0	0	0	0	0
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181	180	3	0	0	0	0	0
182	181	3	0	0	0	0	0
183	182	3	0	0	0	0	0
183	184	3	0	0	0	0	0
184	185	3	0	0	0	0	0
185	180	3	0	0	0	0	0
187	188	4	0	0	0	0	0
190	191	3	0	0	0	0	0
192	191	3	0	0	0	0	0
193	192	3	0	0	0	0	0
196	193	3	0	0	0	0	0
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193	198	4	0	0	0	0	0
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202	203	4	0	0	0	0	0
188	203	4	0	0	0	0	0
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204	205	5	0	0	0	0	0
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215	214	7	0	0	0	0	0
216	217	7	0	0	0	0	0
219	218	7	0	0	0	0	0
220	221	7	0	0	0	0	0
223	222	7	0	0	0	0	0
226	225	7	0	0	0	0	0
227	228	7	0	0	0	0	0
229	230	7	0	0	0	0	0
231	232	7	0	0	0	0	0
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**Data File SEATXN.NOT: Subsystems Note File for the Single-Place
Encapsulated Seat**

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"FABRIC DOOR _ NICALON THERMAL BLANKET

1 -6.937512 -.8952823 .15 .129 7 0 4 -3 0 0 0 0 0

"WINDOW

1 -6.937512 -1.895282 .15 .129 7 0 4 -3 0 0 0 0 0

"PRESSURE SEAL

1 -6.937512 -2.895282 .15 .129 7 0 4 -3 0 0 0 0 0

"DOOR REELS (2)

1 -6.937512 -3.895282 .15 .129 7 0 4 -3 0 0 0 0 0

"INSTRUMENTS

1 -6.937512 -4.595283 .15 .129 7 0 4 -3 0 0 0 0 0

"CONTROLLER/POWER SUPPLY

1 -6.937512 -5.495283 .15 .129 7 0 4 -3 0 0 0 0 0

"ATTITUDE CONTROL

1 -8.637512 -6.495283 .15 .129 7 0 4 -3 0 0 0 0 0

"RCC HEAT SHIELD / OUTER SHELL

1 -1.637512 .8047142 .15 .129 7 0 4 -3 0 0 0 0 0

"STOWED DOOR POSITION

1 2.362488 -.1952858 .15 .129 7 0 4 -3 0 0 0 0 0

"TRACTOR ROCKETS (2)

1 2.362488 -.995286 .15 .129 7 0 4 -3 0 0 0 0 0

"MAIN AND DROGUE

1 2.362488 -1.995286 .15 .129 7 0 4 -3 0 0 0 0 0

"INERTIAL REEL

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"SURVIVAL KIT

1 2.362488 -4.795286 .15 .129 7 0 4 -3 0 0 0 0 0

"LIFE SUPPORT SYSTEM

1 2.362488 -5.595286 .15 .129 7 0 4 -3 0 0 0 0 0

"ROCKET PROPULSION SYSTEM

1 2.362488 -6.795286 .15 .129 7 0 4 -3 0 0 0 0 0
"CATAPULT TUBES (2)

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"SEAT

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THRUSTERS(6)
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Data File DS3V.CAD: Three-View File for the Dual-Place
Encapsulated Seat

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10.29181	2.068597	-2.009869E-08	0	0	0
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10.72101	2.560373	-2.009869E-08	0	0	0
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9.809269	1.668055	-2.009869E-08	0	0	0
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9.809269	1.617476	-2.009869E-08	0	0	0
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9.805916	2.854309	-2.009869E-08	0	0	0
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10.14919	3.349987	0	0	0	0
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10.39775	3.706073	0	0	0	0
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9.565163	6.653738	0	0	0	0
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9.5903	5.616409	0	0	0	0
9.27607	5.825645	0	0	0	0
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11.03936	6.790026	0	0	0	0
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10.97711	6.866938	0	0	0	0
10.9855	6.897528	0	0	0	0
10.99387	6.928118	0	0	0	0
11.00226	6.958709	0	0	0	0
11.01062	6.9893	0	0	0	0
11.019	7.019888	0	0	0	0
11.02738	7.050478	0	0	0	0
10.84444	6.858373	0	0	0	0
10.85421	6.888965	0	0	0	0
10.864	6.919552	0	0	0	0
10.87377	6.950143	0	0	0	0
10.88354	6.980734	0	0	0	0
10.8933	7.011322	0	0	0	0
10.9031	7.041913	0	0	0	0
10.91287	7.072504	0	0	0	0
11.08185	6.814323	0	0	0	0
11.09023	6.844912	0	0	0	0
11.09861	6.875503	0	0	0	0
11.107	6.906094	0	0	0	0
11.11537	6.936683	0	0	0	0
11.12375	6.967274	0	0	0	0
11.13212	6.997865	0	0	0	0
11.1405	7.028456	0	0	0	0
11.09667	5.963814	0	0	0	0
10.97293	5.891724	0	0	0	0
11.09861	6.10096	0	0	0	0
11.27458	6.05691	0	0	0	0
11.31857	7.325551	0	0	0	0
8.955553	7.325551	0	0	0	0
10.56442	7.325551	0	0	0	0
9.609156	8.823252	0	0	0	0

10.56442	8.823252	0	0	0	0
10.56442	7.413651	0	0	0	0
9.5086	7.413651	0	0	0	0
9.244648	7.325551	0	0	0	0
10.8975	7.942249	0	0	0	0
11.22431	7.942249	0	0	0	0
11.22431	8.294651	0	0	0	0
10.8975	8.294651	0	0	0	0
9.565163	7.655924	0	0	0	0
9.565163	8.580976	0	0	0	0
10.87237	8.580976	0	0	0	0
10.87237	7.655924	0	0	0	0
10.29418	7.655924	0	0	0	0
10.29418	8.580976	0	0	0	0
9.665714	8.580976	0	0	0	0
9.76627	8.580976	0	0	0	0
9.866823	8.580976	0	0	0	0
9.967377	8.580976	0	0	0	0
10.06794	8.580976	0	0	0	0
10.16849	8.580976	0	0	0	0
10.26904	8.580976	0	0	0	0
10.3696	8.580976	0	0	0	0
10.47015	8.580976	0	0	0	0
10.57069	8.580976	0	0	0	0
10.67126	8.580976	0	0	0	0
10.7718	8.580976	0	0	0	0
10.29418	7.740019	0	0	0	0
10.29418	7.824116	0	0	0	0
10.29418	7.908211	0	0	0	0
10.29418	7.992307	0	0	0	0
10.29418	8.076401	0	0	0	0
10.29418	8.160498	0	0	0	0
10.29418	8.244593	0	0	0	0
10.29418	8.328688	0	0	0	0
10.29418	8.412786	0	0	0	0
10.29418	8.496881	0	0	0	0
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10.87237	7.908211	0	0	0	0
10.87237	7.992307	0	0	0	0
10.87237	8.076401	0	0	0	0
10.87237	8.160498	0	0	0	0
10.87237	8.244593	0	0	0	0
10.87237	8.328688	0	0	0	0
10.87237	8.412786	0	0	0	0
10.87237	8.496881	0	0	0	0
9.565163	7.740019	0	0	0	0
9.565163	7.824116	0	0	0	0
9.565163	7.908211	0	0	0	0

9.565163	7.992307	0	0	0	0
9.565163	8.076401	0	0	0	0
9.565163	8.160498	0	0	0	0
9.565163	8.244593	0	0	0	0
9.565163	8.328688	0	0	0	0
9.565163	8.412786	0	0	0	0
9.565163	8.496881	0	0	0	0
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9.76627	7.655924	0	0	0	0
9.866823	7.655924	0	0	0	0
9.967377	7.655924	0	0	0	0
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10.26904	7.655924	0	0	0	0
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10.47015	7.655924	0	0	0	0
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8.459068	8.355974	0	0	0	0
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11.29999	5.94999	0	0	0	0
11.08174	5.69999	0	0	0	0
11.27499	8.87627	0	0	0	0
11.39999	7.924988	0	0	0	0
11.39999	6.649986	0	0	0	0
11.29999	8.624985	0	0	0	0
11.07499	8.624985	0	0	0	0
11.07464	8.875336	0	0	0	0
10.99999	8.800335	0	0	0	0
10.99999	8.699986	0	0	0	0
11.01686	5.895434	0	0	0	0
11.00702	5.781439	0	0	0	0
11.0615	8.844997	0	0	0	0
11.0615	8.654997	0	0	0	0
11.06975	5.930007	0	0	0	0
11.06975	5.740006	0	0	0	0
8.599999	7.099997	0	0	0	0
8.599999	7.474996	0	0	0	0
8.449999	7.474996	0	0	0	0
8.449999	7.099997	0	0	0	0
8.549999	7.099997	0	0	0	0
8.549999	7.474996	0	0	0	0
11.275	7.574997	0	0	0	0
11.275	7.474996	0	0	0	0
10.925	7.474996	0	0	0	0
11.275	7.099997	0	0	0	0
5	3	3	0	0	0
4	103	3	0	0	0

8	104	6	0	0	0	0	0
9	5	6	0	0	0	0	0
12	102	3	0	0	0	0	0
13	101	3	0	0	0	0	0
16	15	13	0	0	0	0	0
17	18	3	0	0	0	0	0
20	100	3	0	0	0	0	0
22	35	12	0	0	0	0	0
22	39	12	0	0	0	0	0
26	91	12	0	0	0	0	0
27	95	12	0	0	0	0	0
28	31	12	0	0	0	0	0
32	33	12	0	0	0	0	0
34	21	12	0	0	0	0	0
36	37	12	0	0	0	0	0
38	21	12	0	0	0	0	0
40	41	12	0	0	0	0	0
42	23	12	0	0	0	0	0
50	51	12	0	0	0	0	0
52	53	12	0	0	0	0	0
54	55	12	0	0	0	0	0
56	23	12	0	0	0	0	0
84	85	12	0	0	0	0	0
86	87	12	0	0	0	0	0
88	89	12	0	0	0	0	0
90	26	12	0	0	0	0	0
92	93	12	0	0	0	0	0
94	27	12	0	0	0	0	0
96	97	12	0	0	0	0	0
98	28	12	0	0	0	0	0
99	2	13	0	0	0	0	0
100	19	13	0	0	0	0	0
101	14	13	0	0	0	0	0
102	11	13	0	0	0	0	0
110	106	3	0	0	0	0	0
107	203	13	0	0	0	0	0
110	111	6	0	0	0	0	0
116	206	13	0	0	0	0	0
117	205	13	0	0	0	0	0
120	119	3	0	0	0	0	0
121	122	13	0	0	0	0	0
124	204	13	0	0	0	0	0
126	139	12	0	0	0	0	0
126	143	12	0	0	0	0	0
130	195	12	0	0	0	0	0
131	199	12	0	0	0	0	0
132	135	12	0	0	0	0	0
136	137	12	0	0	0	0	0
138	125	12	0	0	0	0	0

140	141	12	0	0	0	0	0
142	125	12	0	0	0	0	0
144	145	12	0	0	0	0	0
146	127	12	0	0	0	0	0
154	155	12	0	0	0	0	0
156	157	12	0	0	0	0	0
158	159	12	0	0	0	0	0
160	127	12	0	0	0	0	0
188	189	12	0	0	0	0	0
190	191	12	0	0	0	0	0
192	193	12	0	0	0	0	0
194	130	12	0	0	0	0	0
196	197	12	0	0	0	0	0
198	131	12	0	0	0	0	0
200	201	12	0	0	0	0	0
202	132	12	0	0	0	0	0
203	435	3	0	0	0	0	0
204	123	3	0	0	0	0	0
205	118	3	0	0	0	0	0
206	115	3	0	0	0	0	0
207	105	3	0	0	0	0	0
208	114	6	0	0	0	0	0
209	210	3	0	0	0	0	0
212	211	3	0	0	0	0	0
100	204	3	0	0	0	0	0
101	205	3	0	0	0	0	0
102	206	3	0	0	0	0	0
99	203	3	0	0	0	0	0
213	214	3	0	0	0	0	0
216	215	3	0	0	0	0	0
103	442	3	0	0	0	0	0
104	441	6	0	0	0	0	0
238	251	15	0	0	0	0	0
238	255	15	0	0	0	0	0
242	307	15	0	0	0	0	0
243	311	15	0	0	0	0	0
244	247	15	0	0	0	0	0
248	249	15	0	0	0	0	0
250	237	15	0	0	0	0	0
254	237	15	0	0	0	0	0
256	257	15	0	0	0	0	0
258	239	15	0	0	0	0	0
266	267	15	0	0	0	0	0
268	269	15	0	0	0	0	0
272	239	15	0	0	0	0	0
300	301	15	0	0	0	0	0
302	303	15	0	0	0	0	0
304	305	15	0	0	0	0	0
306	242	15	0	0	0	0	0

308	309	15	0	0	0	0	0
310	243	15	0	0	0	0	0
312	313	15	0	0	0	0	0
314	244	15	0	0	0	0	0
342	355	15	0	0	0	0	0
342	359	15	0	0	0	0	0
346	411	15	0	0	0	0	0
347	415	15	0	0	0	0	0
348	351	15	0	0	0	0	0
352	353	15	0	0	0	0	0
354	341	15	0	0	0	0	0
356	357	15	0	0	0	0	0
358	341	15	0	0	0	0	0
360	361	15	0	0	0	0	0
362	343	15	0	0	0	0	0
370	371	15	0	0	0	0	0
372	373	15	0	0	0	0	0
374	375	15	0	0	0	0	0
376	343	15	0	0	0	0	0
404	405	15	0	0	0	0	0
406	407	15	0	0	0	0	0
410	346	15	0	0	0	0	0
412	413	15	0	0	0	0	0
414	347	15	0	0	0	0	0
418	348	15	0	0	0	0	0
426	438	3	0	0	0	0	0
428	427	3	0	0	0	0	0
429	439	3	0	0	0	0	0
429	426	3	0	0	0	0	0
430	437	3	0	0	0	0	0
431	432	3	0	0	0	0	0
433	436	3	0	0	0	0	0
430	433	3	0	0	0	0	0
434	99	3	0	0	0	0	0
440	208	6	0	0	0	0	0
443	207	3	0	0	0	0	0
441	444	3	0	0	0	0	0
444	445	3	0	0	0	0	0
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441	440	3	0	0	0	0	0
448	641	3	0	0	0	0	0
449	645	3	0	0	0	0	0
451	642	3	0	0	0	0	0
453	644	3	0	0	0	0	0
455	643	3	0	0	0	0	0
456	646	3	0	0	0	0	0
446	662	3	0	0	0	0	0
460	640	3	0	0	0	0	0
460	448	3	0	0	0	0	0

466	460	3	0	0	0	0	0
624	623	3	0	0	0	0	0
619	624	3	0	0	0	0	0
627	638	3	0	0	0	0	0
635	619	3	0	0	0	0	0
637	636	3	0	0	0	0	0
623	627	3	0	0	0	0	0
466	639	6	0	0	0	0	0
647	446	3	0	0	0	0	0
506	458	6	0	0	0	0	0
652	653	3	0	0	0	0	0
663	653	3	0	0	0	0	0
664	663	3	0	0	0	0	0
666	664	3	0	0	0	0	0
665	656	3	0	0	0	0	0
676	506	6	0	0	0	0	0
678	677	3	0	0	0	0	0
632	681	4	0	0	0	0	0
681	682	4	0	0	0	0	0
633	682	4	0	0	0	0	0
632	633	4	0	0	0	0	0
669	684	3	0	0	0	0	0
685	684	3	0	0	0	0	0
686	685	3	0	0	0	0	0
691	764	3	0	0	0	0	0
696	695	3	0	0	0	0	0
702	701	3	0	0	0	0	0
842	769	3	0	0	0	0	0
774	773	3	0	0	0	0	0
780	779	3	0	0	0	0	0
843	844	3	0	0	0	0	0
779	845	3	0	0	0	0	0
701	846	3	0	0	0	0	0
764	842	3	0	0	0	0	0
848	847	3	0	0	0	0	0
849	850	3	0	0	0	0	0
852	851	3	0	0	0	0	0
853	854	3	0	0	0	0	0
856	855	3	0	0	0	0	0
862	861	3	0	0	0	0	0
862	863	3	0	0	0	0	0
863	810	3	0	0	0	0	0
810	777	3	0	0	0	0	0
864	865	3	0	0	0	0	0
864	866	3	0	0	0	0	0
866	732	3	0	0	0	0	0
732	699	3	0	0	0	0	0
883	921	12	0	0	0	0	0
884	889	12	0	0	0	0	0

886	911	12	0	0	0	0	0
883	931	12	0	0	0	0	0
887	901	12	0	0	0	0	0
890	891	12	0	0	0	0	0
892	893	12	0	0	0	0	0
894	895	12	0	0	0	0	0
895	896	12	0	0	0	0	0
896	897	12	0	0	0	0	0
898	899	12	0	0	0	0	0
900	885	12	0	0	0	0	0
902	903	12	0	0	0	0	0
904	905	12	0	0	0	0	0
906	907	12	0	0	0	0	0
908	909	12	0	0	0	0	0
910	888	12	0	0	0	0	0
912	913	12	0	0	0	0	0
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918	919	12	0	0	0	0	0
920	885	12	0	0	0	0	0
922	923	12	0	0	0	0	0
924	925	12	0	0	0	0	0
926	927	12	0	0	0	0	0
928	929	12	0	0	0	0	0
930	884	12	0	0	0	0	0
932	933	12	0	0	0	0	0
934	935	12	0	0	0	0	0
936	937	12	0	0	0	0	0
937	938	12	0	0	0	0	0
939	940	12	0	0	0	0	0
941	942	12	0	0	0	0	0
942	886	12	0	0	0	0	0
1036	1074	12	0	0	0	0	0
1037	1042	12	0	0	0	0	0
1039	1064	12	0	0	0	0	0
1036	1084	12	0	0	0	0	0
1040	1054	12	0	0	0	0	0
1043	1044	12	0	0	0	0	0
1045	1046	12	0	0	0	0	0
1047	1048	12	0	0	0	0	0
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1049	1050	12	0	0	0	0	0
1051	1052	12	0	0	0	0	0
1053	1038	12	0	0	0	0	0
1055	1056	12	0	0	0	0	0
1057	1058	12	0	0	0	0	0
1059	1060	12	0	0	0	0	0
1061	1062	12	0	0	0	0	0
1063	1041	12	0	0	0	0	0

1065	1066	12	0	0	0	0	0	0
1067	1068	12	0	0	0	0	0	0
1069	1070	12	0	0	0	0	0	0
1071	1072	12	0	0	0	0	0	0
1073	1038	12	0	0	0	0	0	0
1075	1076	12	0	0	0	0	0	0
1077	1078	12	0	0	0	0	0	0
1079	1080	12	0	0	0	0	0	0
1081	1082	12	0	0	0	0	0	0
1083	1037	12	0	0	0	0	0	0
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1087	1088	12	0	0	0	0	0	0
1089	1090	12	0	0	0	0	0	0
1090	1091	12	0	0	0	0	0	0
1092	1093	12	0	0	0	0	0	0
1094	1095	12	0	0	0	0	0	0
1095	1039	12	0	0	0	0	0	0
1020	1098	3	0	0	0	0	0	0
1109	1108	3	0	0	0	0	0	0
1099	1097	6	0	0	0	0	0	0
1102	1101	6	0	0	0	0	0	0
1104	1103	3	0	0	0	0	0	0
1107	1106	3	0	0	0	0	0	0
1105	1100	6	0	0	0	0	0	0
698	1099	6	0	0	0	0	0	0
776	1105	6	0	0	0	0	0	0
1114	1115	3	0	0	0	0	0	0
1116	1115	3	0	0	0	0	0	0
1117	1116	3	0	0	0	0	0	0
1117	1114	3	0	0	0	0	0	0
1117	860	6	0	0	0	0	0	0
1118	857	6	0	0	0	0	0	0
1119	858	6	0	0	0	0	0	0
1116	859	6	0	0	0	0	0	0
1122	1121	3	0	0	0	0	0	0
984	1122	3	0	0	0	0	0	0
984	1123	3	0	0	0	0	0	0
4.862495	2.824986	0	3	3.141592	4.712388	0	0	0
5.462494	2.824986	0						
4.862495	3.424987	0						
4.862495	2.174988	0	6	3.141592	4.712388	0	0	0
5.462498	2.174988	0						
4.862495	2.774989	0						
5.162495	3.724986	0	3	1.570797	3.141592	0	0	0
5.962497	3.724986	0						
5.162495	4.124989	0						
5.162495	3.749988	0	3	1.570797	3.141592	0	0	0
5.962497	3.749988	0						
5.162495	4.149988	0						

5.162495	4.174984	0	3	1.570797	3.141592	0	0	0	0	0
5.96247	4.174984	0								
5.162495	4.724987	0								
5.162495	4.149987	0	3	1.570797	3.141592	0	0	0	0	0
5.96247	4.149987	0								
5.162495	4.699986	0								
5.162495	4.312489	0	3	1.570797	3.141592	0	0	0	0	0
5.9625	4.312489	0								
5.162495	4.952489	0								
6.799993	2.824986	0	3	-1.570796	0	0	0	0	0	0
7.399994	2.824986	0								
6.799993	3.424987	0								
6.799995	2.174988	0	6	-1.570796	9.321062E-07	0	0	0	0	0
7.399994	2.174988	0								
6.799995	2.774989	0								
6.499995	4.312489	0	3	0	1.570798	0	0	0	0	0
7.3	4.312489	0								
6.499995	4.952489	0								
6.499995	3.749988	0	3	0	1.570798	0	0	0	0	0
7.299997	3.749988	0								
6.499995	4.149989	0								
6.499995	3.724987	0	3	0	1.570798	0	0	0	0	0
7.299997	3.724987	0								
6.499995	4.124989	0								
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6.499995	4.724987	0								
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4.981843	4.324991	0	1	0	0	0	0	0	0	0
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4.981843	4.449991	0								
6.674241	4.324991	0	1	0	0	0	0	0	0	0
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6.674241	4.449991	0								
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4.368744	5.124989	0								
7.293744	5.02499	0	3	0	1.570796	0	0	0	0	0
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7.293744	5.124989	0								
7.243744	5.02499	0	3	1.570796	3.141592	0	0	0	0	0
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7.243744	5.124989	0								
7.268745	5.037487	0	4	0	0	0	0	0	0	0

7.343745	5.037487	0									
7.268745	5.112491	0									
7.268745	4.999989	0	4	0	0	0	0	0	0	0	
7.306244	4.999989	0									
7.268745	5.037487	0									
4.393745	5.037487	0	4	0	0	0	0	0	0	0	
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4.431244	4.999989	0									
4.393745	5.037487	0									
10.61856	3.349987	0	1	1.570796	2.380054	0	0	0	0	0	
12.23713	3.349987	-2.009869E-08									
10.61856	4.968545	0									
7.583757	5.069713	-2.009869E-08	6	5.110262	6.256524	0	0	0	0	0	
11.3695	5.069713	-2.009869E-08									
7.583757	8.855446	-2.009869E-08									
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9.341404	4.332356	-2.009869E-08	1	4.061312	.8902763	0	0	0	0	0	
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9.341404	4.499277	-2.009869E-08									
11.14122	4.968554	-2.009869E-08	3	3.141592	4.712412	0	0	0	0	0	
11.2761	4.968554	-2.009869E-08									
11.14122	5.103433	-2.009869E-08									
11.11594	4.91797	-2.009869E-08	4	0	0	0	0	0	0	0	
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9.766275	6.617691	0	3	1.5708	3.141592	0	0	0	0	0	
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9.213226	6.617691	0									
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9.640579	6.617691	0	3	1.570799	3.141592	0	0	0	0	0
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9.715994	6.617697	0	3	1.570803	3.141592	0	0	0	0	0
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9.313782	6.617691	0	6	1.570798	3.141592	0	0	0	0	0
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9.414333	6.617691	0	6	1.570798	3.141592	0	0	0	0	0
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8.559624	6.617691	0								
10.59082	7.952196	0	3	0	1.299613	0	0	0	0	0
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11.28211	7.952194	0								
10.26402	7.958568	0	3	1.316958	1.824634	0	0	0	0	0
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10.95532	7.958568	0								
9.767532	7.958565	0	3	1.5708	3.141592	0	0	0	0	0
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9.214483	7.958565	0								
9.742392	7.958566	0	3	1.570799	3.141592	0	0	0	0	0
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9.189346	7.958566	0								
9.641838	7.958566	0	3	1.570799	3.141592	0	0	0	0	0
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9.717251	7.95856	0	3	1.570803	3.141592	0	0	0	0	0
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9.792667	7.958569	0								
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9.742392	7.958568	0								
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11.28211	7.952194	0								

9.315039	7.958566	0	6	1.570798	3.141592	0	0	0	0	0
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8.460329	7.958566	0								
9.41559	7.958566	0	6	1.570798	3.141592	0	0	0	0	0
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8.560881	7.958566	0								
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9.364054	6.455975	0	1	0	0	0	0	0	0	0
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7.149993	6.649989	0	6	6.056828	0	0	0	0	0	0
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7.149993	10.88297	0								
7.149993	7.924988	0	6	0	.2263562	0	0	0	0	0
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7.149993	12.14999	0								
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11.07499	8.699986	0	3	3.141592	4.712388	0	0	0	0	0
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11.07499	8.774984	0								
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11.08175	5.77499	0	3	3.055492	4.712381	0	0	0	0	0
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11.08175	5.849989	0								
11.05	8.749998	0	4	0	0	0	0	0	0	0
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11.09	8.749998	0								
11.09	8.749998	0	4	3.785093	5.639682	0	0	0	0	0
11.09	8.631249	0								
11.1375	8.749998	0								
11.05825	5.835008	0	4	0	0	0	0	0	0	0
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11.09825	5.835008	0								
11.09825	5.835008	0	4	3.785093	5.639682	0	0	0	0	0
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11.14575	5.835008	0								
0	0	0	0	0	0					

**Data File DS3V.DIM: Dimensions File for the Dual-Place
Encapsulated Seat**

"2.00", "DS3V192.CAD", "IN", 1, 0, 0
1 687 765 1 1 .55 3.2 0 0 0 0 0 0 0
.15, .13, 0, 2, 3, 0, 0, "60"
2 859 1100 1 1 -.012 1.536 0 0 0 0 0 0 0
.15, .13, 0, 2, 3, 0, 0, "60"
1 3 224 1 1 -.712 -3.35 0 0 0 0 0 0 0
.15, .13, 0, 2, 3, 0, 0, "65"

**Data File DSEATXL.CAD: Subsystems Location File for the
Dual-Place Encapsulated Seat**

"2.00", "", "IN", 1, 0, 0

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9.437512	4.995286	2.980232E-08	0	0	0										
6.237516	4.995286	2.980232E-08	0	0	0										
7.837513	7.745566	-2.980232E-08	0	0	0										
9.387523	5.195566	0	0	0	0										
6.637513	6.545567	0	0	0	0										
9.287513	5.095569	0	0	0	0										
7.787523	7.695567	0	0	0	0										
9.337524	5.145567	2.980232E-08	0	0	0										
6.687513	6.595568	0	0	0	0										
6.237518	5.045567	0	0	0	0										
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10.93752	8.195294	0	0	0	0										
9.287513	4.895291	0	0	0	0										
6.237516	4.895291	2.980232E-08	0	0	0										
6.337503	4.894994	0	0	0	0										
5.474999	2.374997	-2.980232E-08	0	0	0										
5.374998	2.374997	0	0	0	0										
5.287502	1.994993	0	0	0	0										
5.437499	1.944992	0	0	0	0										
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5.425004	2.35	-2.980232E-08	0	0	0										
7.325009	2.35	-5.960464E-08	0	0	0										
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9.9375	8.094993	0	0	0	0										
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8.775	4.149996	8.940697E-08	0	0	0										
7.475	4.374998	5.960465E-08	0	0	0										
7.45	4.324998	5.960465E-08	0	0	0										
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6.887503	5.119996	2.980232E-08	0	0	0										
6.862503	5.169994	0	0	0	0										
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6.787503	5.119996	0	0	0	0										
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8.825	3.974997	5.960465E-08	0	0	0										
8.862503	3.844994	0	0	0	0										

7.662503	3.844994	0	0	0	0
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10.36251	6.644992	0	0	0	0
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9.52515	3.16016	0	0	0	0
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9.445602	3.115965	-2.980232E-08	0	0	0
9.224633	2.841961	0	0	0	0
9.472123	3.089449	-2.980232E-08	0	0	0
6.612503	1.569996	0	0	0	0
6.712503	1.669995	0	0	0	0
7.837503	1.669995	0	0	0	0
9.012503	2.344997	2.980232E-08	0	0	0
9.012503	2.244996	2.980232E-08	0	0	0
7.837503	1.569996	0	0	0	0
10.3625	5.444997	0	0	0	0
10.3625	4.169994	0	0	0	0
9.6875	2.919995	5.960465E-08	0	0	0
9.5875	2.919995	-2.980232E-08	0	0	0
10.2625	4.169995	0	0	0	0
10.2625	5.269998	0	0	0	0
10.5125	5.744997	-5.960465E-08	0	0	0
9.5125	1.444996	0	0	0	0
9.91251	1.344997	-5.960465E-08	0	0	0
10.8625	5.644999	5.960465E-08	0	0	0
10.82	8.189999	0	0	0	0
10.82	8.429998	0	0	0	0
10.26	8.429998	0	0	0	0
10.2	8.249998	0	0	0	0
10.46	7.989999	0	0	0	0

10.8	7.989999	0	0	0	0
10.2	8.249998	0	0	0	0
10.46	8.339998	0	0	0	0
10.43	8.259997	0	0	0	0
10.62	8.279998	0	0	0	0
10.62	8.349999	0	0	0	0
10.82	8.359998	0	0	0	0
10.95	7.449997	0	0	0	0
11.3	7.299995	0	0	0	0
7.600004	3.749998	0	0	0	0
7.650004	3.099998	0	0	0	0
8.300003	3.099998	0	0	0	0
8.300003	3.749998	0	0	0	0
6.700001	3.649998	0	0	0	0
5.900002	3.799998	0	0	0	0
.5	.5000006	0	0	0	0
3.5	.5000006	0	0	0	0
8.825	3.674998	0	0	0	0
7.624999	3.674998	0	0	0	0
6.124999	4.074998	0	0	0	0
5.549998	2.674998	0	0	0	0
6.124999	2.474998	0	0	0	0
6.699999	3.874998	0	0	0	0
5.800001	8.599997	0	0	0	0
7.500001	7.599997	0	0	0	0
7.000001	6.899996	0	0	0	0
3.400001	7.199996	0	0	0	0
4.1	6.199996	0	0	0	0
6.7	4.399997	0	0	0	0
4.2	5.199997	0	0	0	0
4.2	4.299997	0	0	0	0
6.3	4.199997	0	0	0	0
6.1	3.199997	0	0	0	0
4.4	3.199997	0	0	0	0
4.099999	2.199997	0	0	0	0
5.699999	1.599997	0	0	0	0
3.699999	1.499997	0	0	0	0
9.799999	1.499997	0	0	0	0
11.6	1.499997	0	0	0	0
11.6	2.599997	0	0	0	0
9.299997	2.599997	0	0	0	0
11.6	3.599997	0	0	0	0
7.999998	3.299997	0	0	0	0
8.4	3.799997	0	0	0	0
11.6	4.099997	0	0	0	0
11.6	5.099997	0	0	0	0
9.199999	4.499996	0	0	0	0
11.6	6.199997	0	0	0	0
9.900002	6.499996	0	0	0	0

10.2	7.099997	0	0	0	0
11.6	7.099997	0	0	0	0
11.6	7.899996	0	0	0	0
10.4	7.499996	0	0	0	0
11.6	8.799997	0	0	0	0
9.800005	8.299995	0	0	0	0
9.000006	8.799994	0	0	0	0
2	1	3	0	0	0
3	2	3	0	0	0
4	5	3	0	0	0
6	7	3	0	0	0
8	9	3	0	0	0
10	9	3	0	0	0
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1	13	3	0	0	0
15	14	3	0	0	0
15	3	3	0	0	0
21	15	3	0	0	0
22	16	3	0	0	0
22	23	3	0	0	0
24	25	2	0	0	0
25	26	2	0	0	0
26	28	2	0	0	0
28	29	2	0	0	0
30	29	2	0	0	0
31	30	2	0	0	0
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35	36	2	0	0	0
36	26	2	0	0	0
37	38	2	0	0	0
16	38	2	0	0	0
39	40	2	0	0	0
41	40	2	0	0	0
42	41	2	0	0	0
43	42	2	0	0	0
44	43	2	0	0	0
45	46	5	0	0	0
59	58	5	0	0	0
59	60	5	0	0	0
60	61	5	0	0	0
63	62	5	0	0	0
63	64	5	0	0	0
64	65	5	0	0	0
67	86	2	0	0	0
67	72	2	0	0	0
68	94	2	0	0	0
71	78	2	0	0	0

73	74	2	0	0	0	0	0
74	75	2	0	0	0	0	0
75	76	2	0	0	0	0	0
77	68	2	0	0	0	0	0
79	80	2	0	0	0	0	0
81	82	2	0	0	0	0	0
83	84	2	0	0	0	0	0
85	70	2	0	0	0	0	0
86	87	2	0	0	0	0	0
88	89	2	0	0	0	0	0
89	90	2	0	0	0	0	0
91	92	2	0	0	0	0	0
93	66	2	0	0	0	0	0
95	96	2	0	0	0	0	0
96	97	2	0	0	0	0	0
98	99	2	0	0	0	0	0
99	100	2	0	0	0	0	0
101	69	2	0	0	0	0	0
124	125	4	0	0	0	0	0
126	127	4	0	0	0	0	0
129	128	4	0	0	0	0	0
131	130	4	0	0	0	0	0
132	133	4	0	0	0	0	0
133	134	4	0	0	0	0	0
135	134	4	0	0	0	0	0
132	135	4	0	0	0	0	0
136	137	4	0	0	0	0	0
139	138	4	0	0	0	0	0
141	140	4	0	0	0	0	0
142	143	4	0	0	0	0	0
160	161	4	0	0	0	0	0
161	162	4	0	0	0	0	0
163	162	4	0	0	0	0	0
163	162	4	0	0	0	0	0
160	163	4	0	0	0	0	0
164	150	4	0	0	0	0	0
166	165	4	0	0	0	0	0
167	168	4	0	0	0	0	0
168	169	4	0	0	0	0	0
170	169	4	0	0	0	0	0
167	170	4	0	0	0	0	0
172	171	4	0	0	0	0	0
158	173	4	0	0	0	0	0
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175	176	3	0	0	0	0	0
176	177	3	0	0	0	0	0
178	177	3	0	0	0	0	0
179	178	3	0	0	0	0	0
174	179	3	0	0	0	0	0

181	180	3	0	0	0	0	0			
182	181	3	0	0	0	0	0			
183	182	3	0	0	0	0	0			
183	184	3	0	0	0	0	0			
184	185	3	0	0	0	0	0			
185	180	3	0	0	0	0	0			
187	188	4	0	0	0	0	0			
190	191	3	0	0	0	0	0			
192	191	3	0	0	0	0	0			
193	192	3	0	0	0	0	0			
196	193	3	0	0	0	0	0			
194	195	3	0	0	0	0	0			
192	197	4	0	0	0	0	0			
193	198	4	0	0	0	0	0			
199	190	4	0	0	0	0	0			
200	201	4	0	0	0	0	0			
187	202	4	0	0	0	0	0			
202	203	4	0	0	0	0	0			
188	203	4	0	0	0	0	0			
212	46	5	0	0	0	0	0			
213	212	5	0	0	0	0	0			
213	45	5	0	0	0	0	0			
215	214	5	0	0	0	0	0			
215	216	5	0	0	0	0	0			
216	217	5	0	0	0	0	0			
214	217	5	0	0	0	0	0			
218	219	7	0	0	0	0	0			
221	220	7	0	0	0	0	0			
222	3 7	0	0	0	0	0	0			
224	223	7	0	0	0	0	0			
225	226	7	0	0	0	0	0			
228	227	7	0	0	0	0	0			
229	113	7	0	0	0	0	0			
231	230	7	0	0	0	0	0			
232	233	7	0	0	0	0	0			
235	234	7	0	0	0	0	0			
237	236	7	0	0	0	0	0			
238	239	7	0	0	0	0	0			
241	240	7	0	0	0	0	0			
243	242	7	0	0	0	0	0			
244	245	7	0	0	0	0	0			
247	246	7	0	0	0	0	0			
200	248	7	0	0	0	0	0			
250	249	7	0	0	0	0	0			
9.437512	4.995283	2.980232E-08	1	1.570796	2.380054	0	0	0	0	0
12.63752	4.995283	0								
9.437512	8.195283	2.980232E-08								
9.437512	4.995286	2.980232E-08	3	0	0	0	0	0	0	0
9.63752	4.995286	2.980232E-08								

9.437512	5.195284	2.980232E-08								
3.437513	8.495282	0	3	5.115503	6.242666	0	0	0	0	0
10.83008	8.495282	5.960465E-08								
3.437513	15.88784	0								
3.437517	8.395293	0	6	5.110262	6.256524	0	0	0	0	0
10.92217	8.395293	0								
3.437517	15.87995	0								
6.073266	2.2926	0	6	2.574772	5.112052	0	0	0	0	0
6.913503	2.2926	0								
6.073266	3.132835	0								
6.087501	2.394994	0	13	2.613512	5.05542	0	0	0	0	0
6.794603	2.394994	0								
6.087501	3.1021	0								
8.875	4.149996	2.980233E-08	6	0	0	0	0	0	0	0
8.97501	4.149996	5.960465E-08								
8.875	4.249999	2.980233E-08								
9.88751	6.519992	0	5	0	0	0	0	0	0	0
10.0625	6.519992	0								
9.88751	6.694993	0								
10.33751	7.969993	5.960465E-08	14	0	0	0	0	0	0	0
10.4375	7.969993	0								
10.33751	8.069993	5.960465E-08								
10.33751	7.969993	5.960465E-08	14	0	0	0	0	0	0	0
10.51251	7.969993	-5.960465E-08								
10.33751	8.144994	5.960465E-08								
10.2725	7.999992	5.960465E-08	2	6.059707	2.918115	0	0	0	0	0
10.38531	7.999992	0								
10.2725	8.112798	5.960465E-08								
10.5025	7.944993	0	2	6.059707	2.927534	0	0	0	0	0
10.6153	7.944993	-5.960465E-08								
10.5025	8.057798	0								
8.482173	2.576798	0	4	4.712388	1.570796	0	0	0	0	0
8.630803	2.710623	-2.980232E-08								
8.348343	2.725428	0								
7.739023	1.907668	0	4	1.570796	4.712388	0	0	0	0	0
7.887652	2.041493	0								
7.605203	2.056297	0								
9.330703	3.425327	-2.980232E-08	4	4.712388	1.570796	0	0	0	0	0
9.196873	3.276697	0								
9.182073	3.559154	0								
9.99983	4.168471	5.960465E-08	4	1.570796	4.712388	0	0	0	0	0
9.866	4.019843	-5.960465E-08								
9.8512	4.302299	0								
9.012503	2.894996	2.980232E-08	4	5.30039	4.124386	0	0	0	0	0
9.139983	3.022471	2.980232E-08								
8.885023	3.022472	0								
6.087501	2.364995	0	3	2.553589	5.069522	0	0	0	0	0
6.808613	2.364995	0								
6.087501	3.086104	0								

9.437512	4.995283	2.980232E-08	2	2.380054	2.593831	0	0	0	0	0
12.63752	4.995283	0								
9.437512	8.195283	2.980232E-08								
9.437512	4.995283	2.980232E-08	1	2.593831	3.141592	0	0	0	0	0
12.63752	4.995283	0								
9.437512	8.195283	2.980232E-08								
6.912503	6.937493	0	1	4.061312	.8902763	0	0	0	0	0
7.242513	6.937493	0								
6.912503	7.267504	0								
10.46	8.249998	0	3	3.141592	4.712388	0	0	0	0	0
10.72	8.249998	0								
10.46	8.509998	0								
10.47	8.089998	0	4	0	0	0	0	0	0	0
10.55001	8.089998	0								
10.47	8.169999	0								
10.47	8.089998	0	4	0	0	0	0	0	0	0
10.5	8.089998	0								
10.47	8.119999	0								
10.48	8.289997	0	4	3.785093	2.034443	0	0	0	0	0
10.53	8.289997	0								
10.48	8.339997	0								
10.59	8.309998	0	4	1.107149	5.30039	0	0	0	0	0
10.63472	8.309998	0								
10.59	8.354719	0								
6.650004	4.400001	0	5	0	0	0	0	0	0	0
6.850005	4.400001	0								
6.650004	4.6	0								
7.974998	3.274998	0	5	0	0	0	0	0	0	0
8.324997	3.274998	0								
7.974998	3.624997	0								
6.074998	1.999997	0	5	0	0	0	0	0	0	0
6.399998	1.999997	0								
6.074998	2.324996	0								

**Data File DSEATXN.NOT: Subsystems Note File for the Dual-Place
Encapsulated Seat**

"2.00", "DSEATXL.CAD", "IN", 1, 0, 0

1 -8.637512 .804718 .15 .129 7 0 4 -3 0 0 0 0 0

"FABRIC DOOR _ NICALON THERMAL BLANKET

1 -6.937512 -.8952823 .15 .129 7 0 4 -3 0 0 0 0 0

"WINDOW

1 -6.937512 -1.895282 .15 .129 7 0 4 -3 0 0 0 0 0

"PRESSURE SEAL

1 -6.937512 -2.895282 .15 .129 7 0 4 -3 0 0 0 0 0

"DOOR REELS (2)

1 -6.937512 -3.895282 .15 .129 7 0 4 -3 0 0 0 0 0

"INSTRUMENTS

1 -8.637512 -6.495283 .15 .129 7 0 4 -3 0 0 0 0 0

"RCC HEAT SHIELD / OUTER SHELL

1 -1.637512 .8047142 .15 .129 7 0 4 -3 0 0 0 0 0

"STOWED DOOR POSITION

1 2.362488 -.995286 .15 .129 7 0 4 -3 0 0 0 0 0

"MAIN AND DROGUE

1 2.362488 -5.595286 .15 .129 7 0 4 -3 0 0 0 0 0

"ROCKET PROPULSION SYSTEM

1 2.362488 -6.795286 .15 .129 7 0 4 -3 0 0 0 0 0

"CATAPULT TUBES (2)

1 -6.937513 -4.795283 .15 .129 7 0 4 -3 0 0 0 0 0

"CONTROLLER/SEQUENCER

1 -6.937513 -5.795283 .15 .129 7 0 4 -3 0 0 0 0 0

"LIFE SUPPORT SYSTEM

1 2.362489 .7047148 .15 .129 7 0 4 -3 0 0 0 0 0

"ATTITUDE CONTROL

1 2.362489 -.2952852 .15 .129 7 0 4 -3 0 0 0 0 0

"TRACTOR ROCKETS (3)

1 2.362489 -2.095285 .15 .129 7 0 4 -3 0 0 0 0 0
"INERTIAL REELS (2)

1 2.362489 -3.095285 .15 .129 7 0 4 -3 0 0 0 0 0
"SEATS (2)

1 2.362489 -4.095285 .15 .129 7 0 4 -3 0 0 0 0 0
"SURVIVAL KITS (2)

1 2.362489 -4.595286 .15 .129 7 0 4 -3 0 0 0 0 0
"ATTITUDE CONTROL
SYSTEM PROPELLANT
",0